# CJ Series
# EtherNet/IP™ Connection Guide

## OMRON Corporation

### Vision System

### FH Series

P575-E1-01

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# 1. Related Manuals

The table below lists the manuals related to this document.
To ensure system safety, make sure to always read and heed the information provided in all Safety Precautions, Precautions for Safe Use, and Precaution for Correct Use of manuals for each device which is used in the system.

| Cat. No. | Model | Manual name |
|---|---|---|
| W472 | CJ2H-CPU6[]-EIP<br>CJ2H-CPU6[]<br>CJ2M-CPU[][] | CJ-series CJ2 CPU Unit Hardware User's Manual |
| W473 | CJ2H-CPU6[]-EIP<br>CJ2H-CPU6[]<br>CJ2M-CPU[][] | CJ-series CJ2 CPU Unit Software User's Manual |
| W465 | CJ1W-EIP21<br>CJ2H-CPU6[]-EIP<br>CJ2M-CPU3[] | EtherNet/IP™ Unit Operation Manual |
| W446 | - | CX-Programmer Operation Manual |
| 2285550-0 | FH-1[][][]/3[][][] | Image Processing System Instruction Sheet |
| Z340 | FH-1[][][]/3[][][] | Vision Sensor FH/FZ5 Series Vision System User's Manual |
| Z341 | FH-1[][][]/3[][][] | Vision Sensor FH/FZ5 Series Vision System Processing Item Function Reference Manual |
| Z342 | FH-1[][][]/3[][][] | Vision Sensor FH/FZ5 Series Vision System User's Manual (Communications Settings) |

# 2. Terms and Definitions

| Term | Explanation and Definition |
|---|---|
| Node | Controllers and devices are connected to the EtherNet/IP network via the EtherNet/IP ports. The EtherNet/IP recognizes each EtherNet/IP port connected to the network as one node.<br>When a device with two EtherNet/IP ports is connected to the EtherNet/IP network, the EtherNet/IP recognizes this device as two nodes.<br>The EtherNet/IP achieves the communications between controllers or the communications between controllers and devices by exchanging data between these nodes connected to the network. |
| Tag | A minimum unit of the data that is exchanged on the EtherNet/IP network is called a tag. The tag is defined as a network variable or as a physical address, and it is allocated to the memory area of each device. |
| Tag set | In the EtherNet/IP network, a data unit that consists of two or more tags can be exchanged. The data unit consisting of two or more tags for the data exchange is called a tag set. Up to eight tags can be configured per tag set for OMRON controllers. |
| Tag data link | In the EtherNet/IP, the tag and tag set can be exchanged cyclically between nodes without using the user program. This standard feature on the EtherNet/IP is called a tag data link. |
| Connection | A connection is used to exchange data as a unit within which data concurrency is maintained. The connection consists of tags or tag sets. Creating the concurrent tag data link between the specified nodes is called a "connection establishment". When the connection is established, the tags or tag sets that configure the connection are exchanged between the specified nodes concurrently. |
| Originator and Target | To perform tag data links, one node requests the opening of a communications line called a "connection".<br>The node that requests opening the connection is called an "originator", and the node that receives the request is called a "target". |
| Tag data link parameter | The tag data link parameter is the setting data to perform the tag data link. It includes the data to set tags, tag sets, and connections. |

# 3. Precautions

(1) Understand the specifications of devices which are used in the system. Allow some margin for ratings and performance. Provide safety measures, such as installing safety circuit in order to ensure safety and minimize risks of abnormal occurrence.

(2) To ensure system safety, always read and heed the information provided in all Safety Precautions, Precautions for Safe Use, and Precaution for Correct Use of manuals for each device used in the system.

(3) The user is encouraged to confirm the standards and regulations that the system must conform to.

(4) It is prohibited to copy, to reproduce, and to distribute a part or the whole of this document without the permission of OMRON Corporation.

(5) The information contained in this document is current as of December 2013. It is subject to change without notice for improvement.

The following notation is used in this document.

| | |
|---|---|
| ⚠ Caution | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage. |

**Precautions for Safe Use**

Precautions on what to do and what not to do to ensure safe usage of the product.

**Precautions for Correct Use**

Precautions on what to do and what not to do to ensure proper operation and performance.

**Additional Information**

Additional information to read as required.
This information is provided to increase understanding or make operation easier.

**Symbol**

The triangle symbol indicates precautions (including warnings).
The specific operation is shown in the triangle and explained in text.
This example indicates a general precaution.

# 4. Overview

This document describes the procedure for connecting the Vision System (FH series) of OMRON Corporation (hereinafter referred to as OMRON) with CJ-series Programmable Controller + Ethernet/IP Unit (hereinafter referred to as the PLC), and the procedure to check their connection.
Refer to *Section 6 EtherNet/IP Settings* and *Section 7 EtherNet/IP Connection Procedure* to understand the setting method and key points to operate the tag data link for EtherNet/IP.
In this document, CJ-series EtherNet/IP Unit and the built-in EtherNet/IP port of CJ-series CJ2 CPU Unit are collectively called as the "EtherNet/IP Unit".

# 5. Applicable Devices and Device Configuration

## 5.1. Applicable Devices

The applicable devices are as follows:

| Manufacturer | Name | Model |
|---|---|---|
| OMRON | CJ2 CPU Unit | CJ2[]-CPU[][] |
| OMRON | EtherNet/IP Unit | CJ1W-EIP21<br>CJ2H-CPU6[]-EIP<br>CJ2M-CPU3[] |
| OMRON | FH Sensor Controller | FH-1[][][]/ FH-1[][][]-[][]<br>FH-3[][][]/FH-3[][][]-[][] |
| OMRON | 0.3 Megapixel Digital Camera<br>0.3 Megapixel Small Digital Camera<br>0.3 Megapixel Small Digital Pen-Shaped Camera<br>0.3 Megapixel High-Speed Camera<br>0.3 Megapixel High-Speed CMOS Camera<br>2 Megapixel Digital Camera<br>2 Megapixel High-Speed CMOS Camera<br>4 Megapixel High-Speed CMOS Camera<br>5 Megapixel Digital Camera<br>Intelligent Camera<br>Intelligent Compact Camera<br>Auto-Focus Camera | FZ-SC/S<br>FZ-SFC/SF<br>FZ-SPC/SP<br><br>FZ-SHC/SH<br>FH-SC/SM<br>FZ-SC2M/S2M<br>FH-SC02/SM02<br>FH-SC04/SM04<br>FZ-SC5M2/S5M2<br>FZ-SLC15/SLC100<br>FZ-SQ010F/SQ050F/SQ100F/SQ100N<br>FZ-SZC15/SZC100 |

**Precautions for Correct Use**

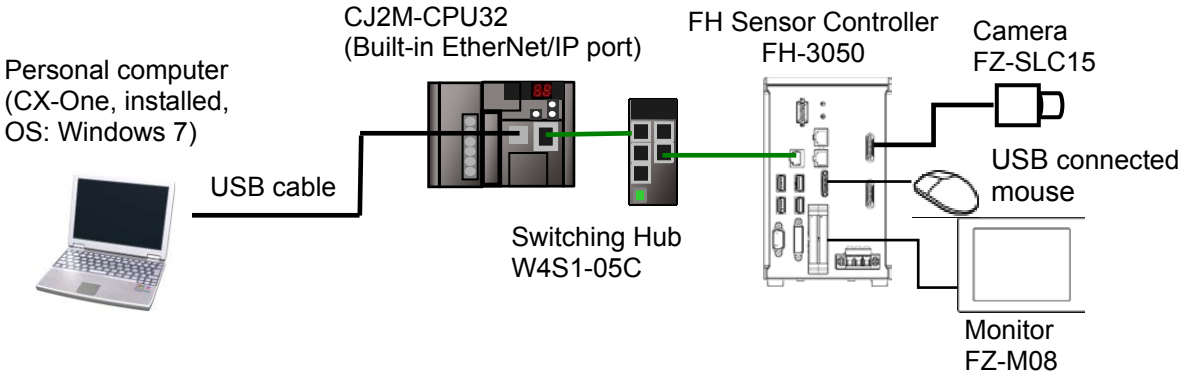
As applicable devices above, the devices with the models and versions listed in *Section 5.2.* are actually used in this document to describe the procedure for connecting devices and checking the connection.
You cannot use devices with versions lower than the versions listed in *Section 5.2.*
To use the above devices with versions not listed in *Section 5.2* or versions higher than those listed in *Section 5.2*, check the differences in the specifications by referring to the manuals before operating the devices.

**Additional Information**

This document describes the procedure to establish the network connection. Except for the connection procedure, it does not provide information on operation, installation or wiring method. It also does not describe the functionality or operation of the devices. Refer to the manuals or contact your OMRON representative.

## 5.2. Device Configuration

The hardware components to reproduce the connection procedure of this document are as follows:




| Manufacturer | Name | Model | Version |
|---|---|---|---|
| OMRON | CPU Unit<br>(Built-in EtherNet/IP port) | CJ2M-CPU32<br>(Built-in CJ2M-EIP21) | Ver.2.0<br>(Ver.2.12) |
| OMRON | Power Supply Unit | CJ1W-PA202 | |
| OMRON | Switching Hub | W4S1-05C | Ver.1.00 |
| OMRON | CX-One | CXONE-AL[][]C-V4<br>/AL[][]D-V4 | Ver.4.[][] |
| OMRON | CX-Programmer | (Included in CX-One) | Ver.9.43 |
| OMRON | Network-Configurator | (Included in CX-One) | Ver.3.56 |
| - | Personal computer (OS: Windows7) | - | |
| - | USB cable<br>(USB 2.0 type B connector) | - | |
| - | LAN cable (STP (shielded, twisted-pair) cable of Ethernet category 5 or higher) | - | |
| OMRON | FH Sensor Controller<br>(Camera 2ch type) | FH-3050 | Ver.5.00 |
| OMRON | Camera | FZ-SLC15 | |
| OMRON | Camera cable | FZ-VS | |
| OMRON | Monitor (analog RGB monitor) | FZ-M08 | |
| OMRON | Monitor conversion cable | FH-VMRGB | |
| - | USB connected mouse | - | |

**Precautions for Correct Use**

Update the CX-Programmer and Network Configurator to the versions specified in this section or higher versions using the auto update function.
If a version not specified in this section is used, the procedures described in *Section 7* and subsequent sections may not be applicable. In that case, use the equivalent procedures described in the *CX-Programmer Operation Manual* (Cat. No. W446) and Network Configurator Online Help.

**Additional Information**

The system configuration in this document uses USB for the connection between the personal computer and PLC. For information on how to install the USB driver, refer to *A-5 Installing the USB Driver* of the *CJ-series CJ2 CPU Unit Hardware User's Manual* (Cat. No. W472).

# 6. EtherNet/IP Settings

This section describes the specifications such as communication parameters and tag data link that are set in this document.

## 6.1. EtherNet/IP Communications Parameters

The communications parameter required connecting the PLC and the FH Sensor Controller via EtherNet/IP is given below.

| | PLC (EtherNet/IP Unit) (node 1) | FH Sensor Controller (node 2) |
|---|---|---|
| Unit number | 0 | - |
| Node address | 1 | 2 |
| IP address | 192.168.250.1 | 192.168.250.2 |
| Subnet mask | 255.255.255.0 | 255.255.255.0 |

## 6.2. Allocating the Tag Data Links

The tag data links are allocated for the FH Sensor Controller as shown below.

| | Output area | | Input area |
|---|---|---|---|
| D10000 | (From PLC to FH Sensor Controller) | D10100 | (From FH Sensor Controller to PLC) |
| D10009 | 20 bytes | D10123 | 48 bytes |

■ Details on output area

| | Bit | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Meaning |
| D10100 | ERCLR | | | | | | | XEXE | | | | | | | STEP | EXE | Control output (2 words) |
| D10101 | | | | | | | | | | | | | | | | DSA | |
| D10102<br>D10103 | CMD-CODE | | | | | | | | | | | | | | | | Command code (2 words) |
| D10104<br>D10105<br>D10106<br>D10107<br>D10108<br>D10109 | CMD-PARAM | | | | | | | | | | | | | | | | Command parameter (6 words max) |

**Additional Information**

For details on command codes and response codes, refer to *Communicating with EtherNet/IP* in *Section 2 Methods for Connecting and Communicating with External Devices* of the *Vision Sensor FH/FZ5 Series Vision System User's Manual (Communications Settings)* (Cat.No. Z342).

■ Details on input area

| | Bit | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Meaning |
| D10100 | ERR | | | | | XWAIT | XBUSY | XFLG | | | | RUN | OR | | BUSY | FLG | Control output (2 words) |
| D10101 | | | | | | | | | | | | | | | | GATE | |
| D10102<br>D10103 | CMD-CODE | | | | | | | | | | | | | | | | Command code (2 words) |
| D10104<br>D10105 | RES-CODE | | | | | | | | | | | | | | | | Response code (2 words) |
| D10106<br>D10107 | RES-DATA | | | | | | | | | | | | | | | | Response data (2 words) |
| D10108<br>D10109 | DATA0 | | | | | | | | | | | | | | | | Output data 0 |
| D10110<br>D10111 | DATA1 | | | | | | | | | | | | | | | | Output data 1 |
| D10112<br>D10113 | DATA2 | | | | | | | | | | | | | | | | Output data 2 |
| D10114<br>D10115 | DATA3 | | | | | | | | | | | | | | | | Output data 3 |
| D10116<br>D10117 | DATA4 | | | | | | | | | | | | | | | | Output data 4 |
| D10118<br>D10119 | DATA5 | | | | | | | | | | | | | | | | Output data 5 |
| D10120<br>D10121 | DATA6 | | | | | | | | | | | | | | | | Output data 6 |
| D10122<br>D10123 | DATA7 | | | | | | | | | | | | | | | | Output data 7 |

**Additional Information**

For details on command codes and response codes, refer to *Communicating with EtherNet/IP* in *Section 2 Methods for Connecting and Communicating with External Devices* of the *Vision Sensor FH/FZ5 Series Vision System User's Manual (Communications Settings)* (Cat.No. Z342).

# 7. EtherNet/IP Connection Procedure

This section describes the procedure for connecting the FH Sensor Controller to the PLC via EtherNet/IP.
This document explains the procedures for setting up the PLC and the FH Sensor Controller from the factory default setting. For the initialization, refer to *Section 8 Initialization Method*.

## 7.1. Work Flow

Take the following steps to operate the tag data link for EtherNet/IP.

| | |
|---|---|
| **7.2. Setting Up the FH Sensor Controller** | Set up the FH Sensor Controller. |
| ↓ | |
| 7.2.1. Parameter Settings | Set the IP address of the FH Sensor Controller. |
| ↓ | |
| **7.3. Setting Up the PLC** | Set up the PLC. |
| ↓ | |
| 7.3.1. Hardware Settings | Set the hardware switches on the EtherNet/IP Unit and wire the network. |
| ↓ | |
| 7.3.2. Starting the CX-Programmer and Connecting Online with the PLC | Start the CX-Programmer and connect online with the PLC. |
| ↓ | |
| 7.3.3. Creating the I/O Table and setting IP Addresses | Create the I/O table and set the IP address of the PLC. |
| ↓ | |
| **7.4. Setting Up the Network** | Set the tag data links for the EtherNet/IP. |
| ↓ | |
| 7.4.1 Uploading the Configuration | Start the Network Configurator and upload the network configuration. |
| ↓ | |
| 7.4.2. Setting Tags | Register the tags of the send area and receive area. |
| ↓ | |
| 7.4.3. Setting the Connection | Associate the target device with the tags of the originator. |
| ↓ | |
| 7.4.4. Transferring the Tag Data Link Parameters | Transfer the set tag data link parameters to the PLC. |
| ↓ | |
| **7.5. Checking the EtherNet/IP Communications** | Confirm that the EtherNet/IP tag data links are operated normally. |
| ↓ | |
| 7.5.1 Checking the Connection Status | Check the connection status of EtherNet/IP. |
| ↓ | |
| 7.5.2 Checking the Data that are Sent and Received | Confirm that the correct data are sent and received. |

## 7.2. Setting Up the FH Sensor Controller

Set up the FH Sensor Controller.

### 7.2.1. Parameter Settings

Set the IP address of the FH Sensor Controller.

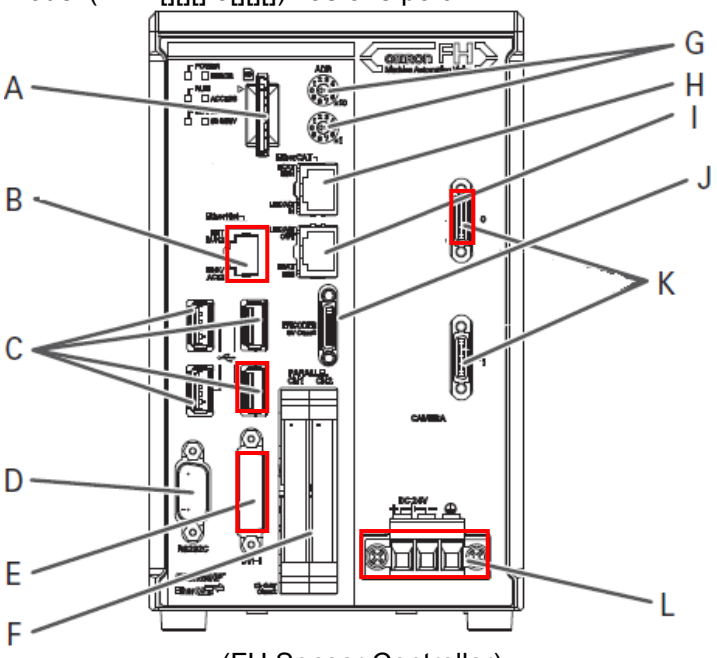
1 Check the position of the connectors on the FH Sensor Controller by referring to the right figure.

B: Connect the LAN cable to the Ethernet connector (PORT1).
K: Connect the camera cable to the camera connector.
E: Connect the DVI-I connector to the monitor connected with the monitor conversion cable.
C: Connect the mouse to the USB connector.
L: Connect the power supply cable to the power supply terminal connector.

* For Model (FH-1[][][]-[][]/3[][][]-[][]), connect the EtherNet/IP communication LAN cable to the PORT2.

* Only the PORT2 can be used for EtherNet/IP communications. Therefore, you can use the PORT2 for EtherNet/IP communications with the PLC while the PORT1 is used for FTP or remote control communications.

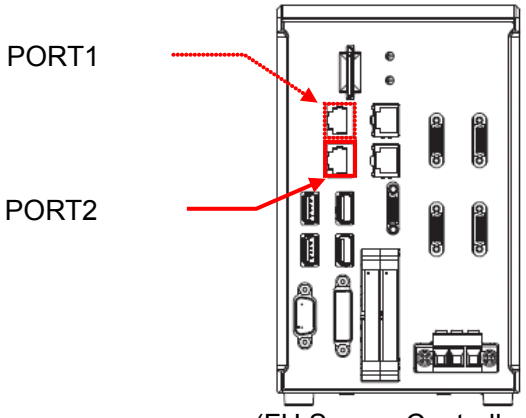
Model (FH-1[][][]/3[][][]) has one port.



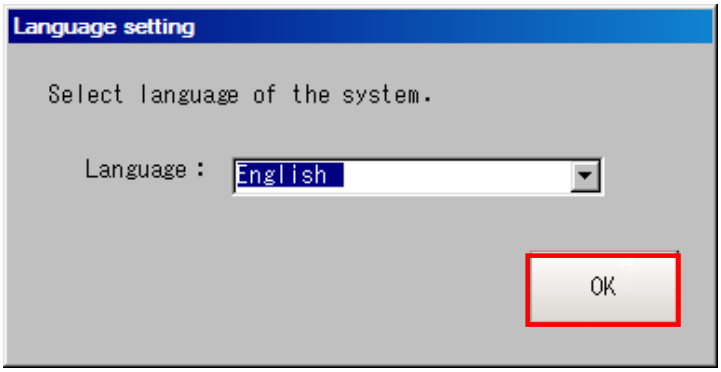
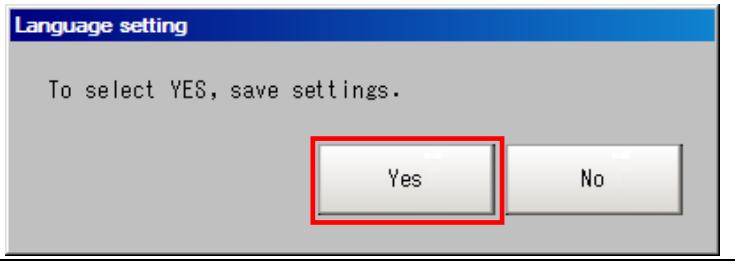
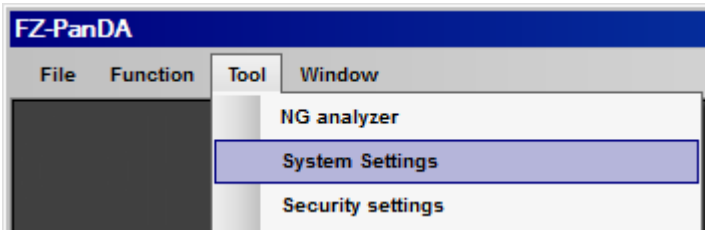
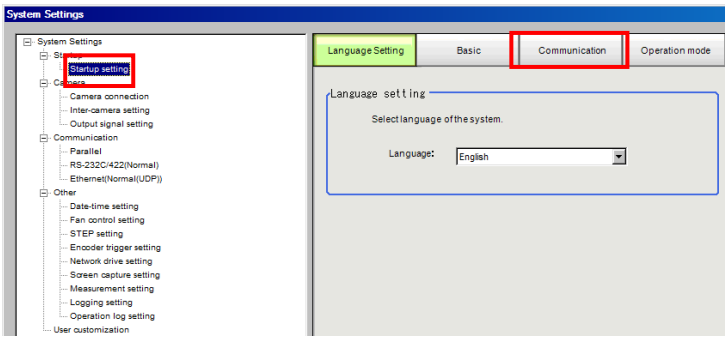
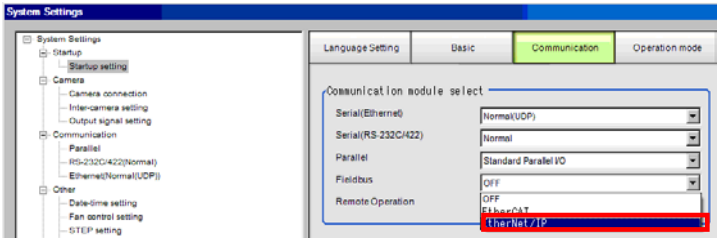
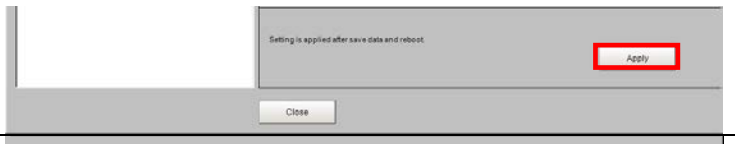

(FH Sensor Controller)

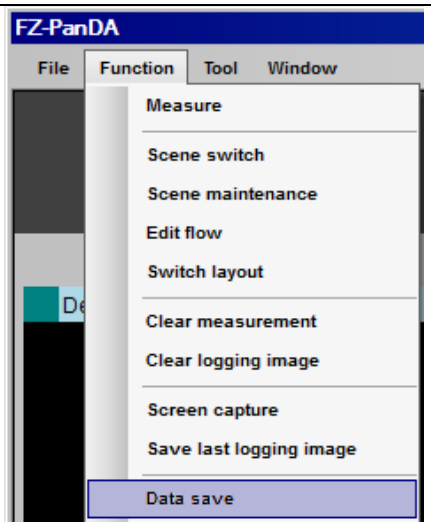
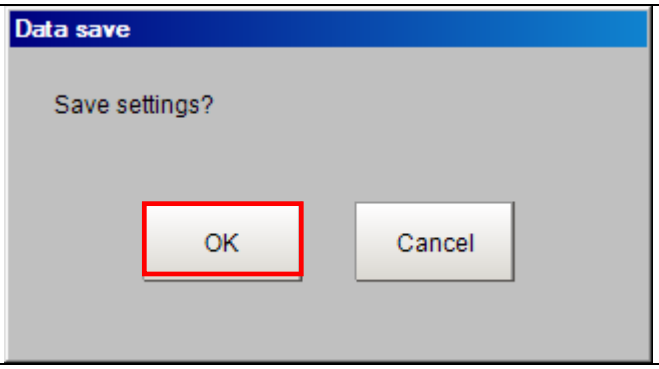
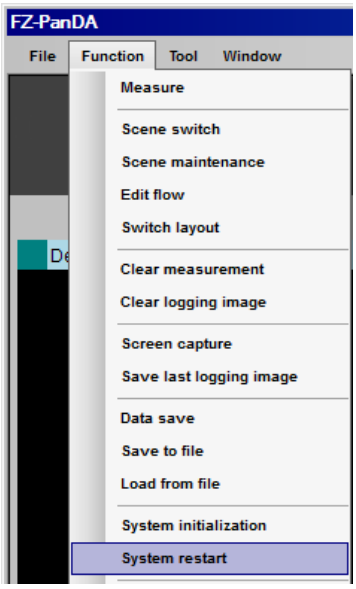
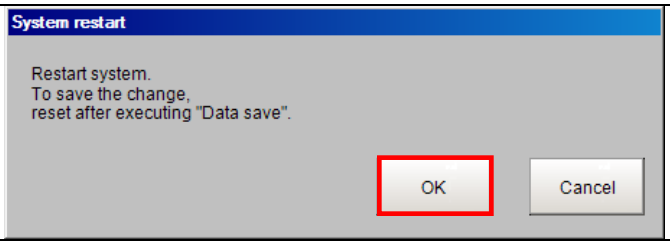
| | Connector name | Description |
|---|---|---|
| A | SD memory card installation connector | Install the SD memory card. Do not plug or unplug the SD card during measurement operation.Otherwise measurement time may be affected or data may be destroyed. |
| B | Ethernet connector | Connect an Ethernet device. |
| C | USB connector | Connect a USB device. Do not plug or unplug it during measurement.Measurement time might be affected otherwise. |
| D | RS-232C connector | Connect an external device such as a programmable controller. |
| E | DVI-I connector | Connect a monitor. |
| F | I/O connector(control lines, data lines) | Connect the controller to external devices such as a sync sensor and PLC. |
| G | EtherCAT address setup volume | Used to set a station address as an EtherCAT communication device. |
| H | EtherCAT communication connector (IN) | Connect the opposed EtherCAT device. |
| I | EtherCAT communication connector (OUT) | Connect the opposed EtherCAT device. |
| J | Encoder connector | Connect an encoder. |
| K | Camera connector | Connect cameras. |
| L | Power supply terminal connector | Connect a DC power supply. Wire the controller independently on other devices. Wire the ground line. Be sure to ground the controller alone. Perform wiring using the attached power supply connector as referring to the description of wiring that connector. |

* Model (FH-1[][][]-[][]/3[][][]-[][]) has two Ethernet ports

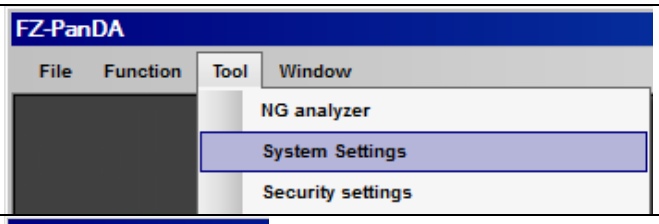



(FH Sensor Controller)

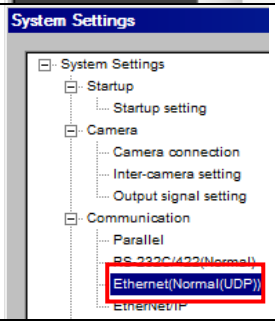
| | | |
|---|---|---|
| 2 | Turn ON the power supply to the FH Sensor Controller. | |
| 3 | The Language setting Dialog Box is displayed on the monitor connected to the FH Sensor Controller only at the initial start. Select ***English*** and click the **OK** Button.<br><br>The dialog box on the right is displayed. Click the **Yes** Button. |  <br>  |
| 4 | Select ***System Settings*** from the Tool Menu. |  |
| 5 | Select **System Settings**-**Startup**-**Startup setting**. The Language setting Dialog Box is displayed. Select the **Communication** Tab. |  |
| 6 | The Communication module select Dialog Box is displayed. Select ***EtherNet/IP*** from the Fieldbus pull-down list. Then, click the **Apply** Button.<br><br>* The data set in the System Settings Dialog Box as shown on the right becomes enabled after the settings are saved, and then the FH Sensor Controller is restarted. |  <br>  |
| 7 | Click the Close **Button** to close the System Settings Dialog Box. | |

| | | |
|---|---|---|
| 8 | Select ***Data save*** from the Function Menu. |  |
| 9 | The Data save Dialog Box is displayed. Click the **OK** Button. |  |
| 10 | Select ***System restart*** from the Function Menu. |  |
| 11 | The System restart Dialog Box is displayed. Check the contents and click the **OK** Button. |  |

**12** After restarting, select ***System Settings*** from the Tool Menu.



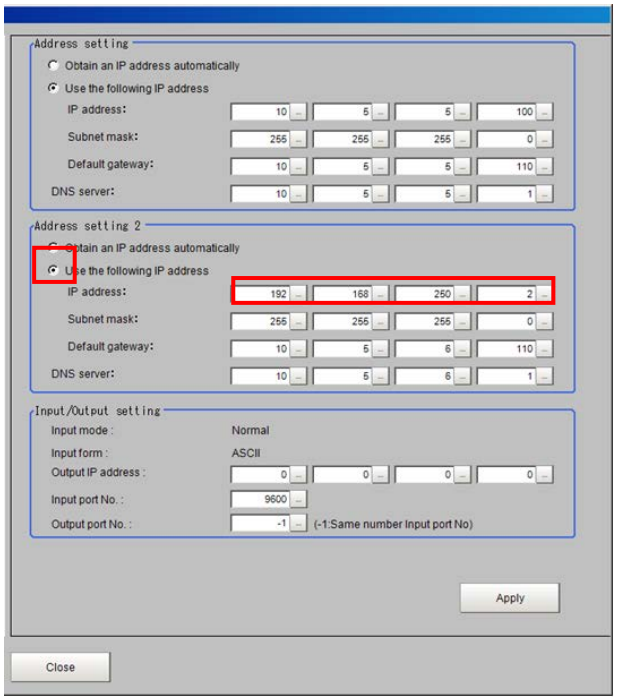

**13** Select **System Settings** - **Communication** - **Ethernet:Normal(UDP)**.




**14** The window on the right is displayed. Select the *Use the following IP address* Option for Address setting 2.

Enter the following values using the numeric keyboard and click the **OK** Button to confirm the values.

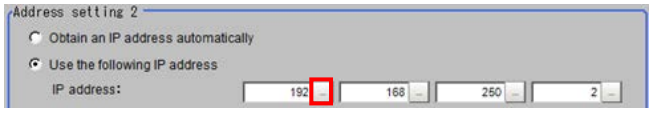
IP address: *192.168.250.2*
Subnet mask: *255.255.255.0*

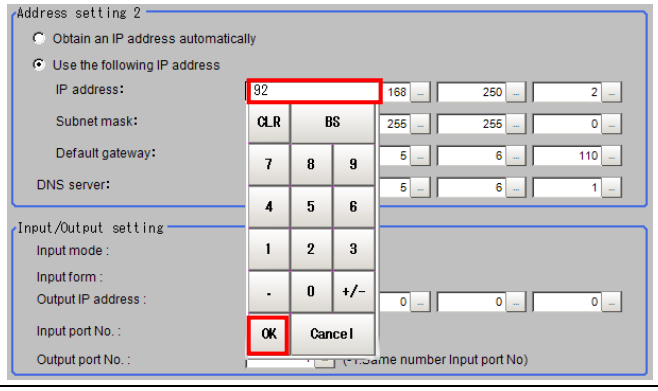

Address setting
Obtain an IP address automatically
Use the following IP address
IP address: 10 5 5 100
Subnet mask: 255 255 255 0
Default gateway: 10 5 5 110
DNS server: 10 5 5 1
Address setting 2
Use the following IP address
IP address: 192 168 250 2
Subnet mask: 255 255 255 0
Default gateway: 10 5 6 110
DNS server: 10 5 6 1
Input/Output setting
Input mode : Normal
Input form : ASCII
Output IP address : 0 0 0 0
Input port No. : 9600
Output port No. : -1 (-1:Same number Input port No)
Apply
Close

* When a value is changed, the Apply Button is displayed

*To change a value, click the ... Button in the item in which a value is to be set.

* How to change IP address.

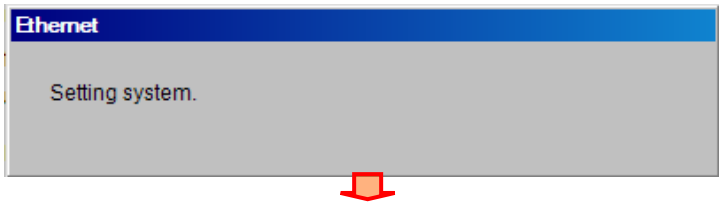



* The numeric keyboard is displayed. Enter values using the mouse. After entering the values, click the **OK** Button on the numeric keyboard.

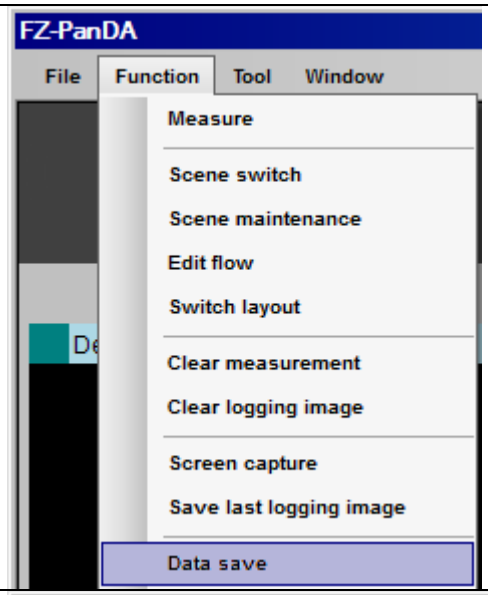
15 When a value is changed, the Apply Button is displayed. Click the **Apply** Button.

The Ethernet Dialog Box is displayed.

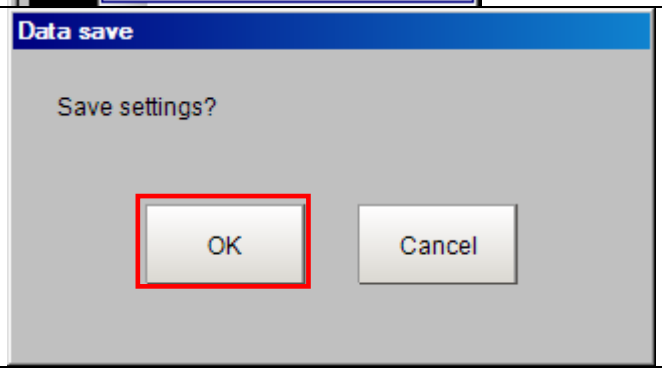



After the Ethernet Dialog Box disappears, click the **Close** Button to close the System Settings Dialog Box.

16 Select ***Data save*** from the Function Menu.




17 The Data save Dialog Box is displayed. Check the contents and click the **OK** Button.



## 7.3. Setting Up the PLC

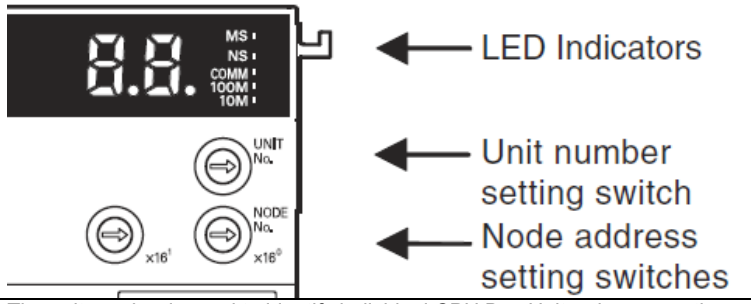
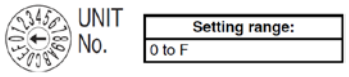
Set up the PLC.

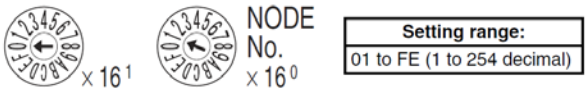
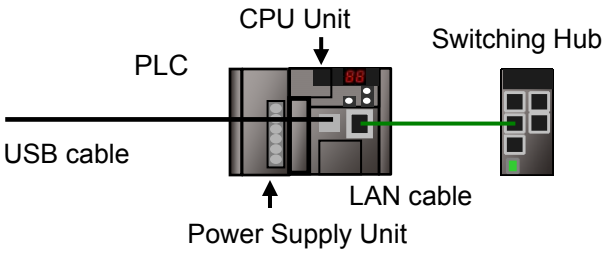
### 7.3.1. Hardware Settings

Set the hardware switches on the EtherNet/IP Unit and wire the network.

**Precautions for Correct Use**

Make sure that the power supply is OFF when you perform the setting up.

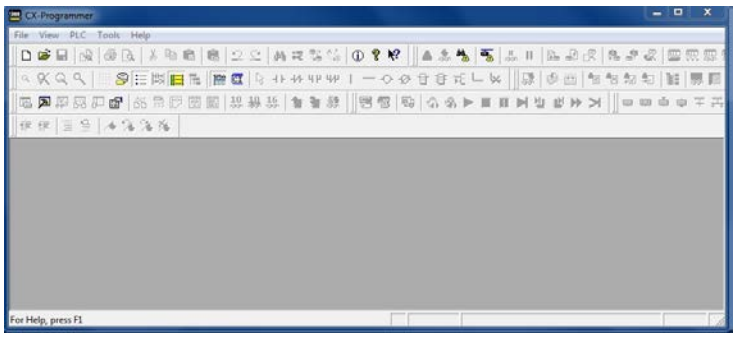
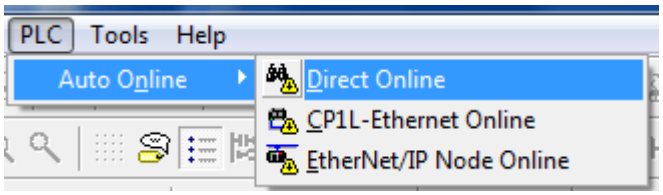
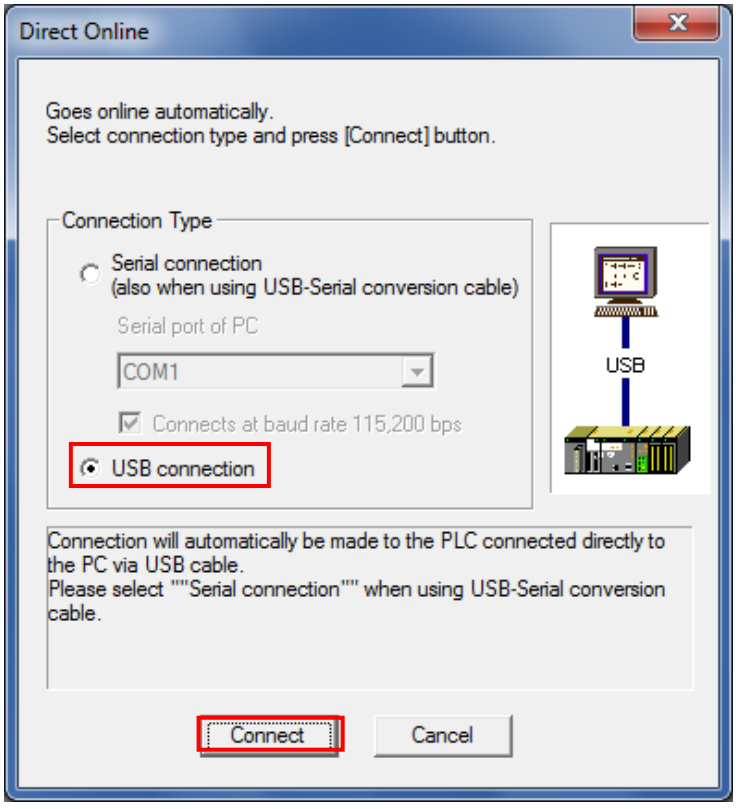
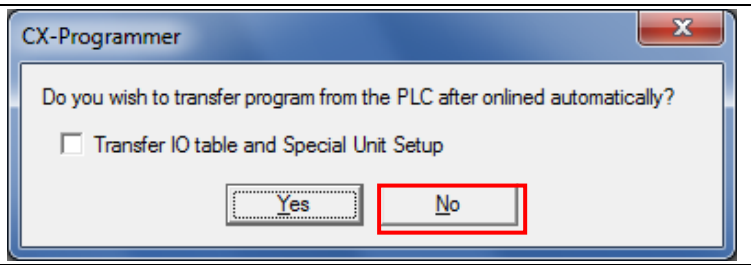
| | | |
|---|---|---|
| 1 | Make sure that the power supply to the PLC is OFF.<br><br>* If the power supply is turned ON, settings may not be applicable as described in the following procedure. | |
| 2 | Check the position of the hardware switches on the front of the EtherNet/IP Unit by referring to the right figure. |  |
| 3 | Set the unit number setting switch to *0*. | The unit number is used to identify individual CPU Bus Units when more than one CPU Bus Unit is mounted to the same PLC. Use a small screwdriver to make the setting, taking care not to damage the rotary switch. The unit number is factory-set to 0.<br>  |

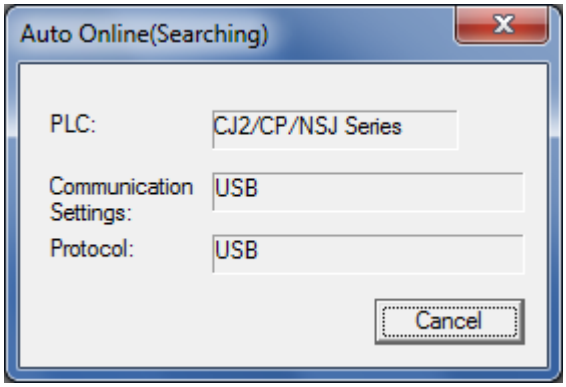
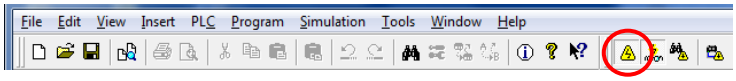
| | | |
|---|---|---|
| 4 | Set the node address setting switches to the following default settings.<br>[NODE No.x16$^1$]: *0*<br>[NODE No.x16$^0$]: *1*<br><br>* Set the IP address to *192.168.250.1*.<br><br>* By default, the first to third octets of the local IP address are fixed to 192.168.250. The fourth octet is the values that were set with the node address setting switches. | With the FINS communications service, when there are multiple EtherNet/IP Units connected to the Ethernet network, the EtherNet/IP Units are identified by node addresses. Use the node address switches to set the node address between 01 and FE hexadecimal (1 to 254 decimal).Do not set a number that has already been set for another node on the same network.<br>  <br>The left switch sets the sixteens digit (most significant digit) and the right switch sets the ones digit (least significant digit).The node address is factory-set to 01.<br>Default IP address = 192.168.250.node address<br>With the factory-default node address setting of 01, the default IP address is 192.168.250.1. |
| 5 | Connect the LAN cable to the EtherNet/IP port of the PLC, and connect the USB cable to the USB port. Connect the personal computer, Switching Hub and PLC as shown in *5.2. Device Configuration*. |  |
| 6 | Turn ON the power supply to the PLC. | |
| 7 | The set IP address is displayed on the seven-segment LED indicators from right to left. Afterwards, the rightmost 8 bits of the IP address are displayed in hexadecimal during normal operation. | |

### 7.3.2. Starting the CX-Programmer and Connecting Online with the PLC

Start the CX-Programmer and connect online with the PLC.

Install the CX-One and USB driver in the personal computer beforehand.

| | | |
|---|---|---|
| 1 | Start the CX-Programmer. |  |
| 2 | Select ***Auto Online*** - ***Direct Online*** from the PLC Menu. |  |
| 3 | The Direct Online Dialog Box is displayed. Select the *USB connection* Option for Connection Type and click the **Connect** Button. |  |
| 4 | The dialog box on the right is displayed. Check the contents and click the **No** Button. |  |

| | | |
|---|---|---|
| 5 | The dialog box on the right is displayed, and the CX-Programmer and the PLC are automatically connected. |  |
| 6 | Confirm that the CX-Programmer and the PLC are normally connected online.<br><br>* The icon is pressed down during online connection. |  |

**Additional Information**

If an online connection cannot be made to the PLC, check the cable connection.
Or, return to step 2, check the settings and repeat each step.
For details, refer to *Connecting Directly to a CJ2 CPU Unit Using a USB Cable* in *Chapter 3 Project Reference of the CX-Programmer Operation Manual* (Cat. No. W466).

**Additional Information**

The dialog boxes explained in the following procedures may not be displayed depending on the environmental setting of CX-Programmer.
For details on the environmental settings, refer to *Options and Preferences* in *Chapter 3 Project Reference of the CX-Programmer Operation Manual* (Cat. No. W466). This document explains the setting procedure when the *Confirm all operations affecting the PLC* Check Box is selected.

### 7.3.3. Creating the I/O Table and setting IP Addresses

Create the I/O table and set the IP address of the PLC.

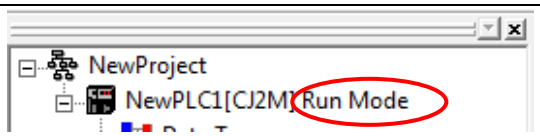
1 If the operating mode of the PLC is RUN Mode or Monitor Mode, change it to Program Mode by following the steps below.

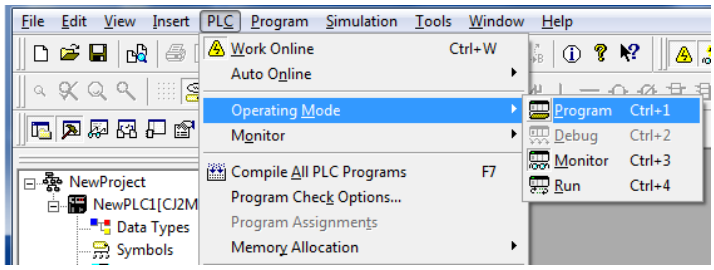
(1) Select ***Operating Mode*** - ***Program*** from the PLC Menu of the CX-Programmer.

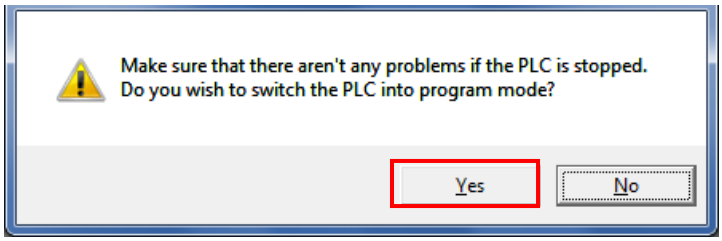
(2) The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.

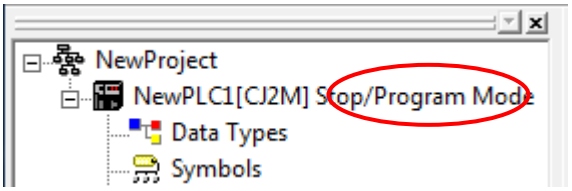
* Refer to *Additional Information* on the previous page for the settings concerning the dialog display.

(3) Confirm that Stop/Program Mode is displayed on the right of the PLC model in the project workspace of the CX-Programmer.



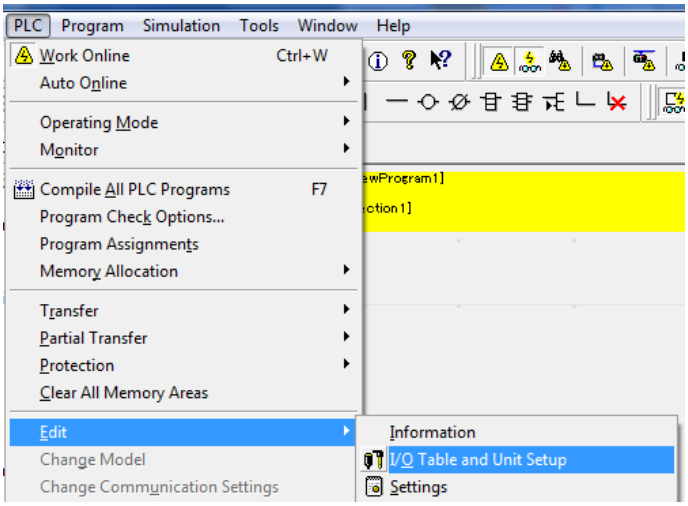



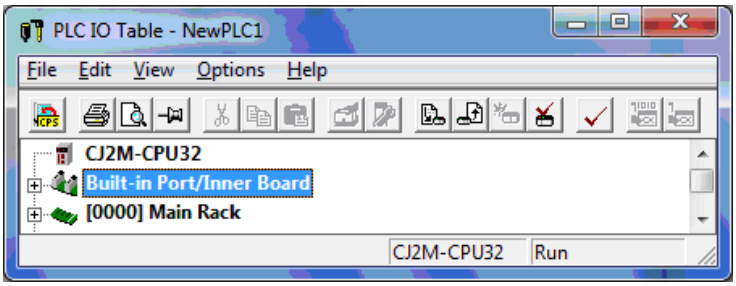




(Project workspace)

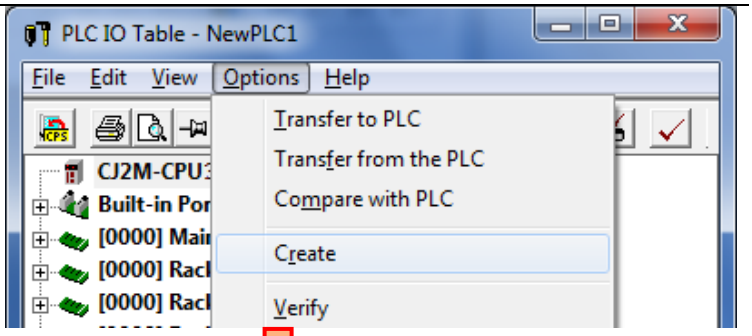
2 Select ***Edit*** - ***I/O Table and Unit Setup*** from the PLC Menu of the CX-Programmer.



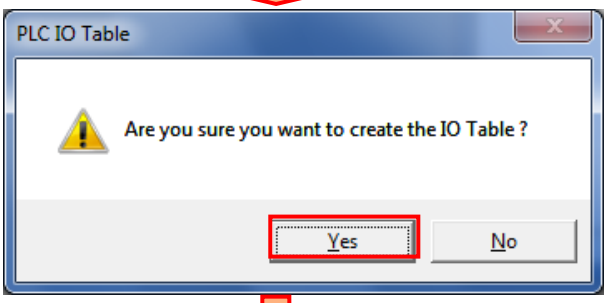

The PLC IO Table Window is displayed.



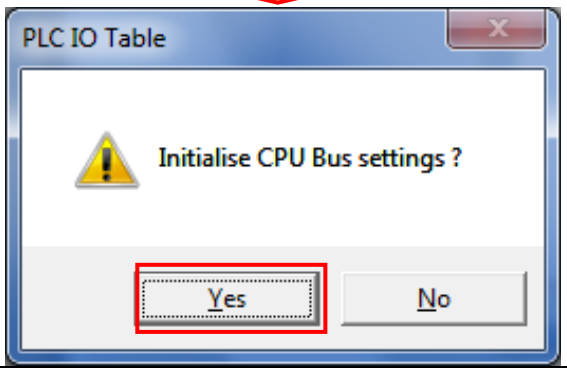

3 Select ***Create*** from the Options Menu of the PLC IO Table Window.



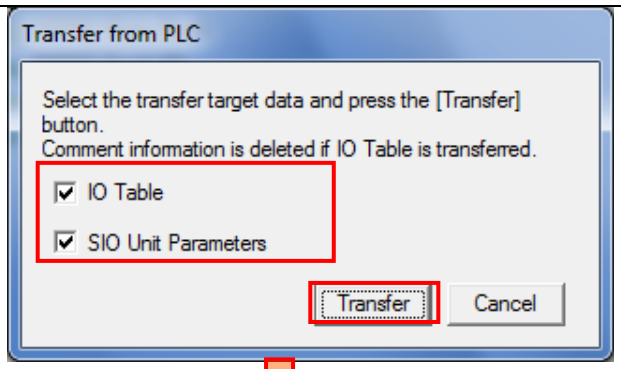

The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.

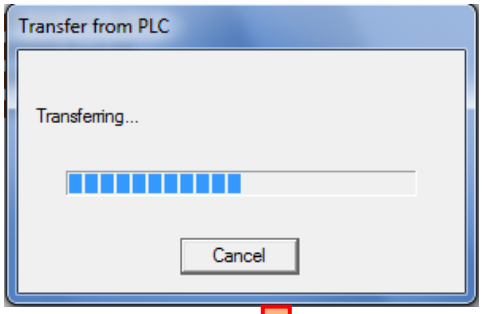



The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.



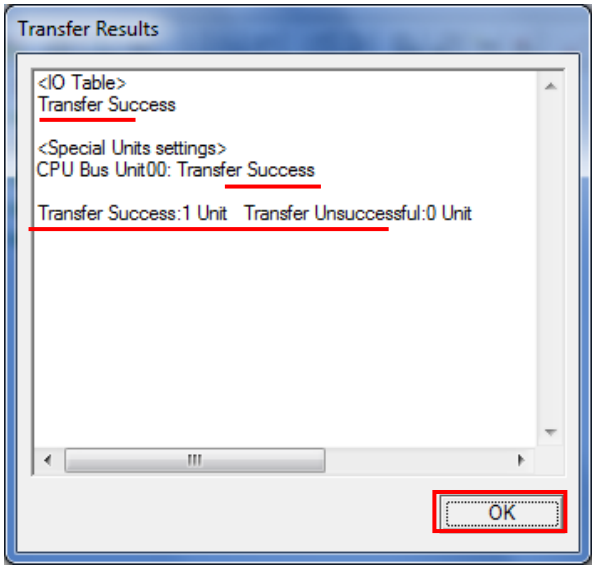
4 The Transfer from PLC Dialog Box is displayed. Select the *I/O Table* Check Box and the *SIO Unit Parameters* Check Box, and click the **Transfer** Button.


Transfer from PLC
Select the transfer target data and press the [Transfer] button.
Comment information is deleted if IO Table is transferred.
IO Table
SIO Unit Parameters
Transfer
Cancel




When the transfer is completed, the Transfer Results Dialog Box is displayed.
Confirm that the transfer was normally executed by referring to the message in the dialog box.

When the I/O table is created normally, the dialog box displays as follows:
Transfer Success: 1 Unit
Transfer Unsuccessful: 0 Unit

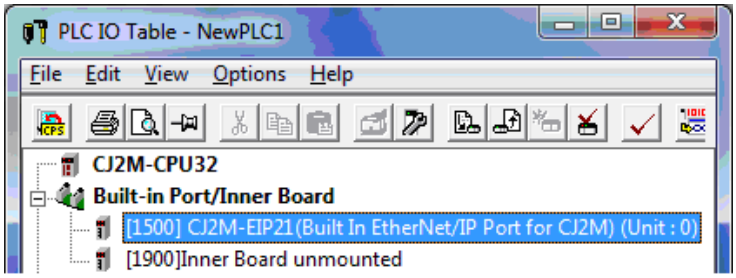


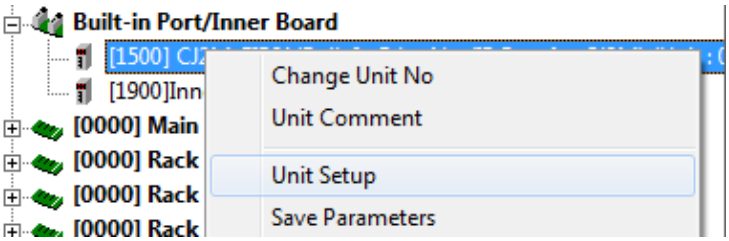

Click the **OK** Button.

5 On the PLC IO Table Window, click **+** to the left of Built-in Port/Inner Board to display CJ2M-EIP21.

* The right figure displays the CPU Unit (built-in EtherNet/IP port) specified in *5.2. Device Configuration*. When you use an applicable EtherNet/IP Unit not specified in *5.2. Device Configuration*, the display position and name are different from this figure.

Right-click **CJ2M-EIP21** and select ***Unit Setup***.


PLC IO Table - NewPLC1
File Edit View Options Help
CJ2M-CPU32
Built-in Port/Inner Board
[1500] CJ2M-EIP21(Built In EtherNet/IP Port for CJ2M) (Unit : 0)
[1900]Inner Board unmounted

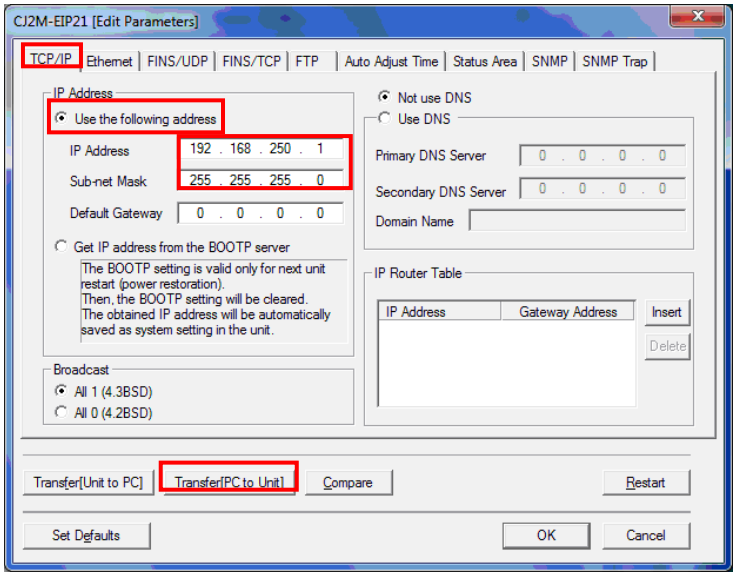



6 The Edit Parameters Dialog Box is displayed. Select the **TCP/IP** Tab.

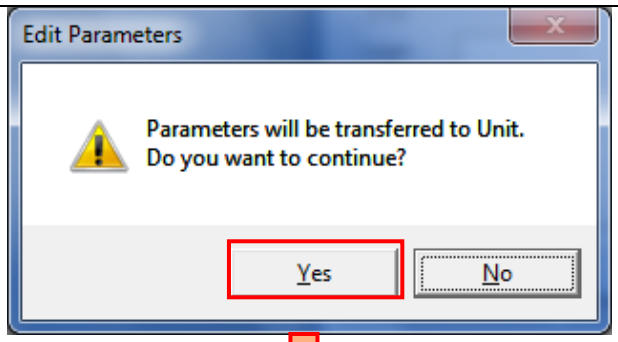
Select the *Use the following address* Check Box in the *IP Address* Field, and make the following settings.

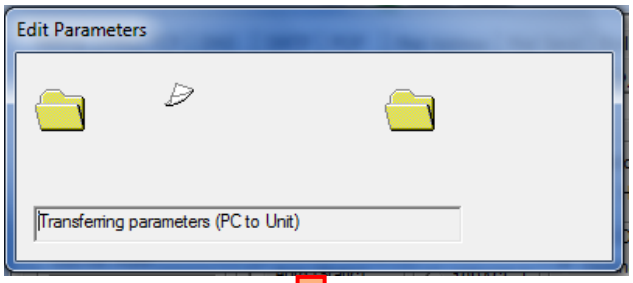
- IP Address: *192.168.250.1*
- Subnet Mask: *255.255.255.0*

Click the **Transfer [PC to Unit]** Button.

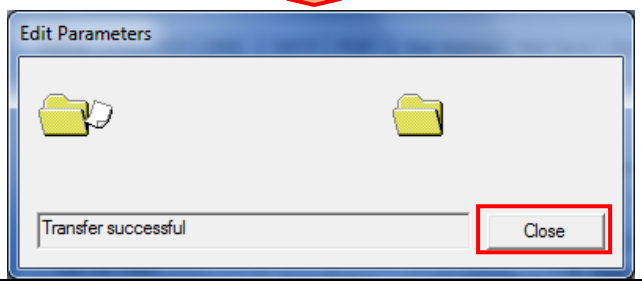

CJ2M-EIP21 [Edit Parameters]
TCP/IP Ethernet FINS/UDP FINS/TCP FTP Auto Adjust Time Status Area SNMP SNMP Trap
IP Address
Use the following address
IP Address 192 . 168 . 250 . 1
Sub-net Mask 255 . 255 . 255 . 0
Default Gateway 0 . 0 . 0 . 0
Get IP address from the BOOTP server
The BOOTP setting is valid only for next unit restart (power restoration).
Then, the BOOTP setting will be cleared.
The obtained IP address will be automatically saved as system setting in the unit.
Broadcast
All 1 (4.3BSD)
All 0 (4.2BSD)
Not use DNS
Use DNS
Primary DNS Server 0 . 0 . 0 . 0
Secondary DNS Server 0 . 0 . 0 . 0
Domain Name
IP Router Table
IP Address
Gateway Address
Insert
Delete
Transfer[Unit to PC]
Transfer[PC to Unit]
Compare
Restart
Set Defaults
OK
Cancel

7 The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button.

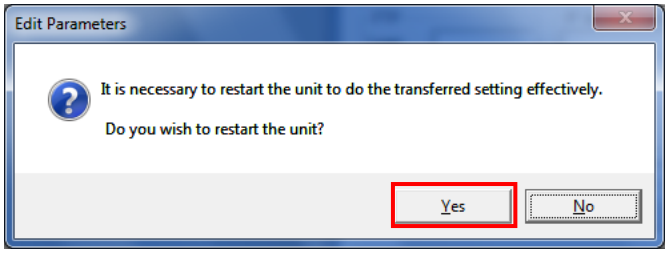


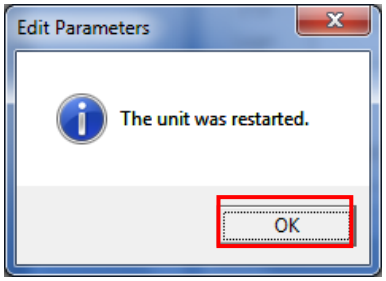

Confirm that parameters were normally transferred to the Unit, and click the **Close** Button.

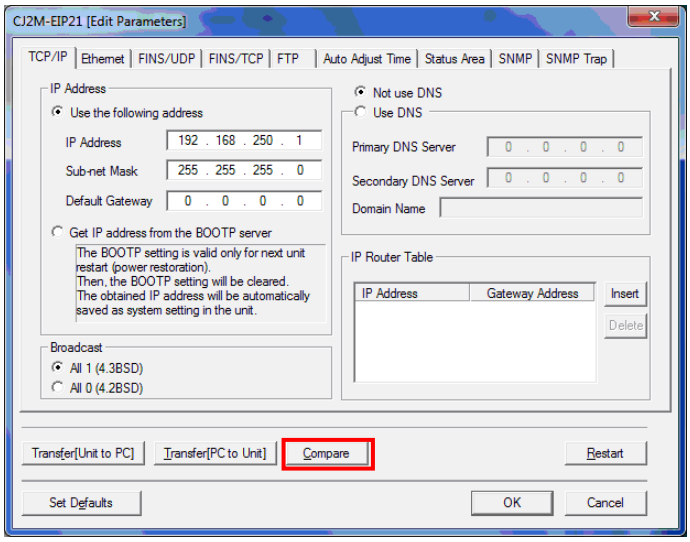
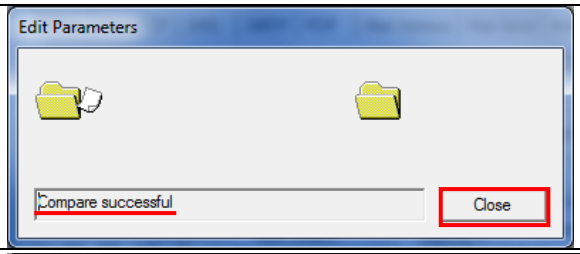
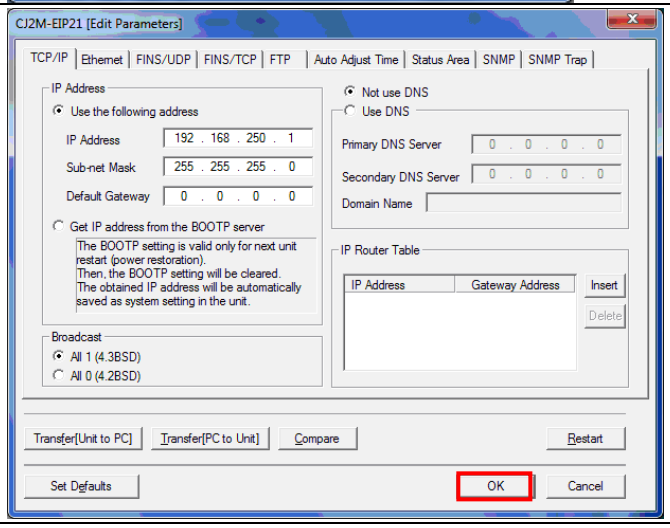



8 A dialog box on the right is displayed. Check the contents and click the **Yes** Button.


Edit Parameters
It is necessary to restart the unit to do the transferred setting effectively.
Do you wish to restart the unit?
Yes
No

When the Unit is restarted, the dialog box on the right is displayed. Check the contents and click the **OK** Button.



| | | |
|---|---|---|
| 9 | To confirm that the IP address was correctly changed, click the **Compare** Button. |  |
| 10 | After confirming that parameters match, click the **Close** Button. |  |
| 11 | Click the **OK** Button on the Edit Parameters Dialog Box. |  |

## 7.4. Setting Up the Network

Set the tag data links for the EtherNet/IP.

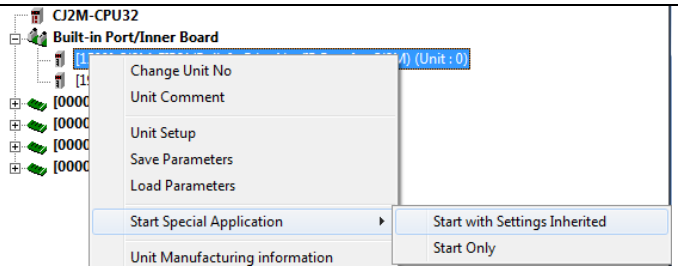
### 7.4.1. Starting the Network Configurator and Uploading the Configuration

Start the Network Configurator and upload the network configuration.

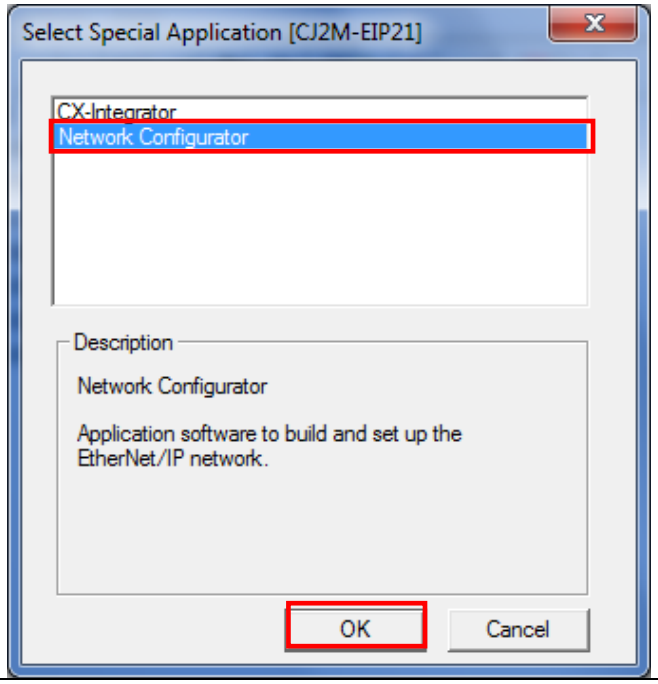
**Precautions for Correct Use**

Please confirm that the LAN cable is connected before performing the following procedure. When it is not connected, turn OFF the power supply to each device and then connect the LAN cable.

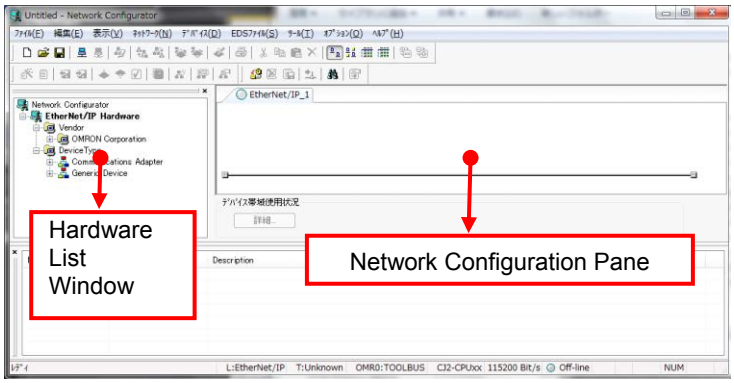
1 Right-click **CJ2M-EIP21** on the PLC IO Table Window, and select ***Start Special Application*** - ***Start with Settings Inherited***.

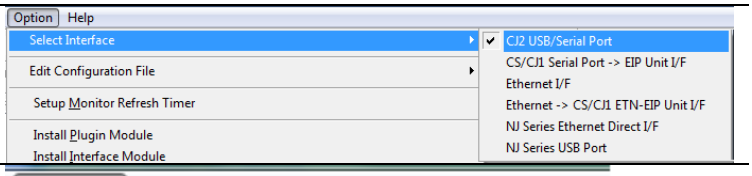
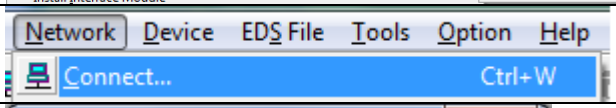
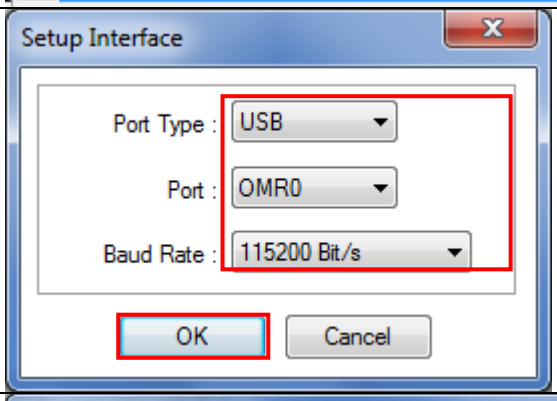
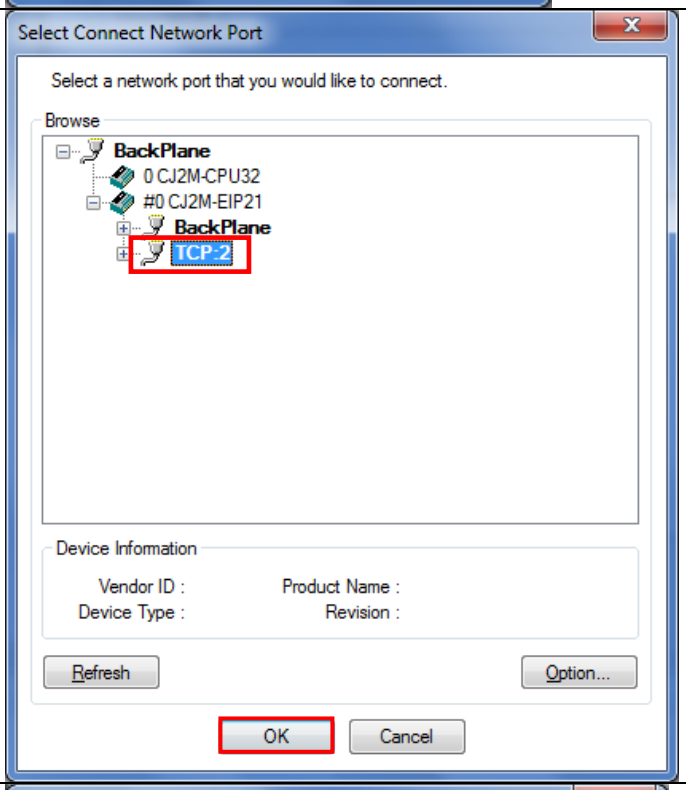
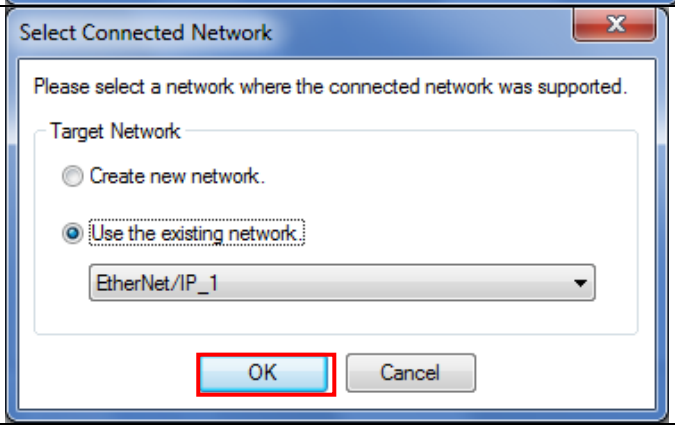



The Select Special Application Dialog Box is displayed. Select *Network Configurator* and click the **OK** Button.



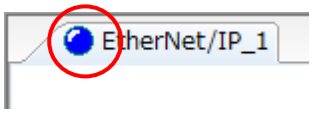
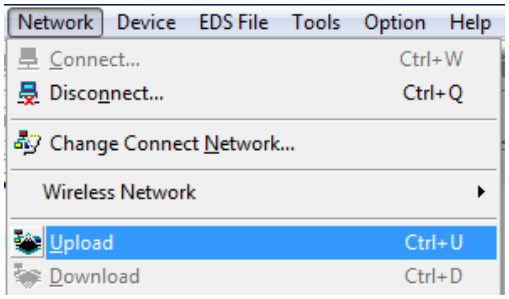
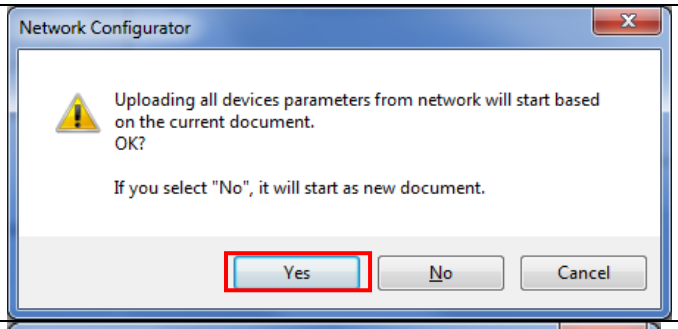
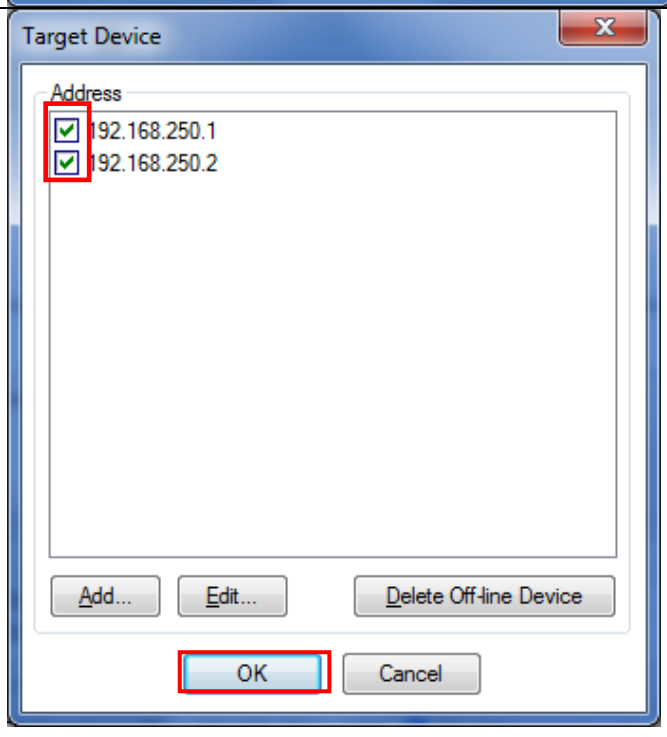

2 Network Configurator is started.

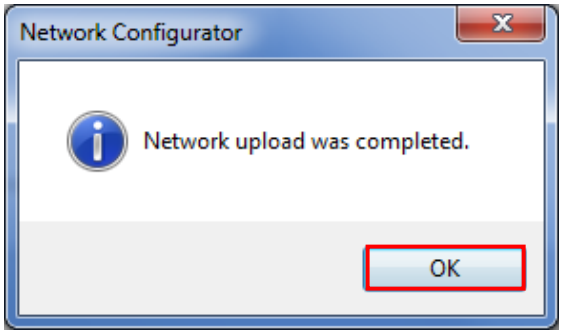
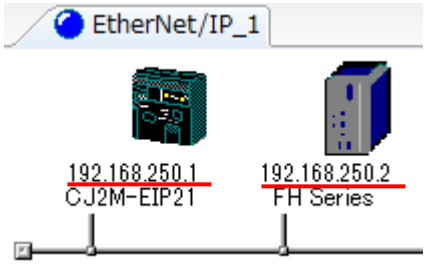


| | | |
|---|---|---|
| 3 | Select ***Select Interface*** - ***CJ2 USB/Serial Port*** from the Option Menu. |  |
| 4 | Select ***Connect*** from the Network Menu. |  |
| 5 | The Setup Interface Dialog Box is displayed.<br>Confirm that the following settings are made.<br>・Port Type: USB<br>・Port: OMR0<br>・Baud Rate: 115200 Bit/s<br>Click the **OK** Button. |  |
| 6 | The Select Connect Network Port Dialog Box is displayed.<br>Select *Back Plane - CJ2M-EIP21 - TCP:2*, and click the **OK** Button. |  |
| 7 | The Select Connected Network Dialog Box is displayed. Click the **OK** Button. |  |

**Additional Information**

If an online connection cannot be made to the PLC, check the cable connection.
Or, return to step 1, check the settings and repeat each step.
For details, refer to *6.2.9 Connecting the Network Configurator* in *Section 6 Tag Data Link Functions of the EtherNet/IP™ Unit Operation Manual* (Cat. No. W465).

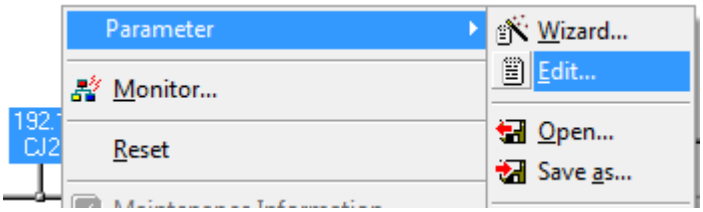
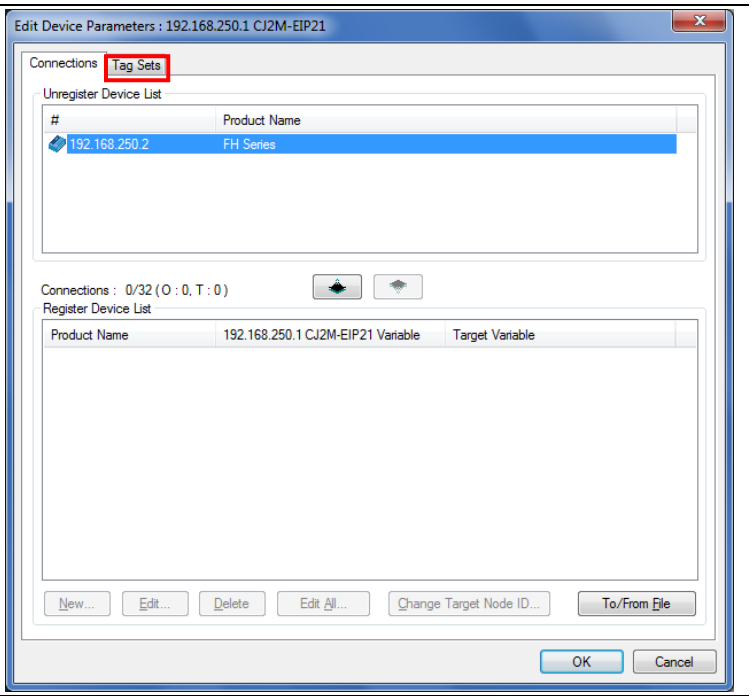
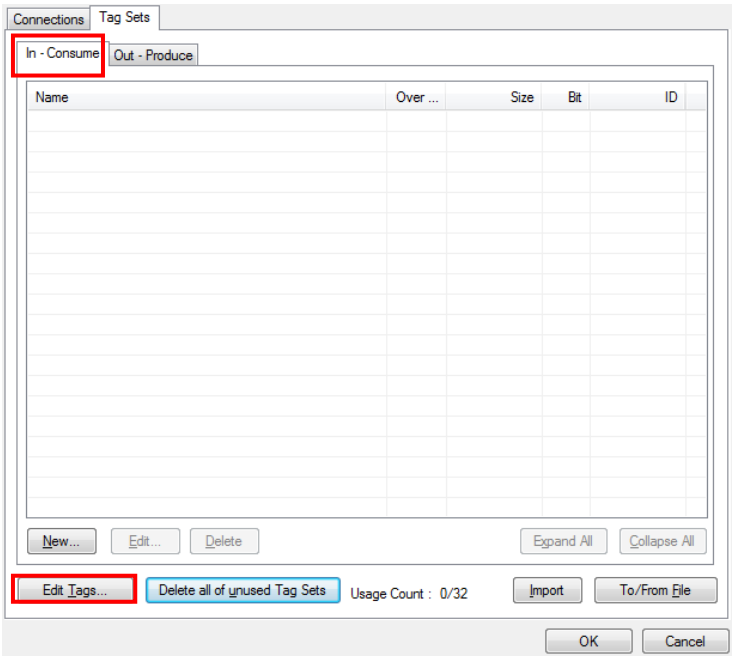
| | | |
|---|---|---|
| 8 | When an online connection is established normally, the color of the icon on the figure changes to blue. |  |
| 9 | Select ***Upload*** from the Network Menu to upload the device information on the network. |  |
| 10 | The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button. |  |
| 11 | The Target Device Dialog Box is displayed.<br>Select the*192.168.250.1* Check Box and the *192.168.250.2* Check Box, and click the **OK** Button.<br><br>* If 192.168.250.1 and 192.168.250.2 are not displayed on the dialog box, click the **Add** Button to add the address.<br><br>* The displayed addresses depend on the status of the Network Configurator. |  |

| | | |
|---|---|---|
| 12 | The device parameters are uploaded. When uploading is completed, the dialog box on the right is displayed.<br>Check the contents and click the **OK** Button. |  |
| 13 | After uploading is completed, confirm that the IP address of each node is updated on the Network Configuration Pane as follows:<br>IP address of node 1:<br>192.168.250.1<br>IP address of node 2<br>192.168.250.2 |  |

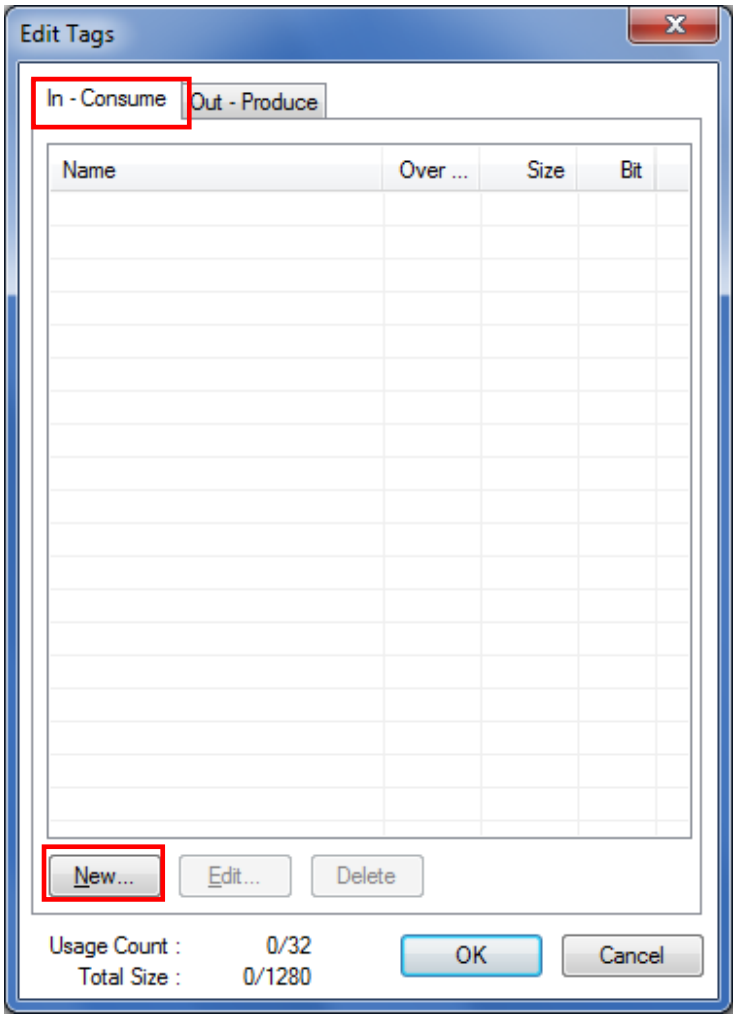
### 7.4.2. Setting Tags

Register the tags of the send area and receive area.

This section explains the receive settings and send settings of the target node in order.

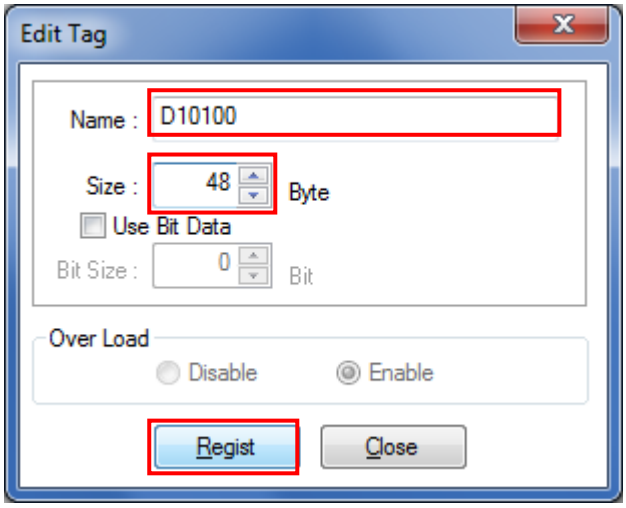
| | | |
|---|---|---|
| 1 | On the Network Configuration Pane of the Network Configurator, right-click the node 1 device and select ***Parameter*** - ***Edit***. |  |
| 2 | The Edit Device Parameters Dialog Box is displayed. Select the **Tag Sets** Tab. |  |
| 3 | The data on the Tag Sets Tab is displayed. Select the **In-Consume** Tab and click the **Edit Tags** Button. |  |

4 The Edit Tags Dialog Box is displayed. Select the **In - Consume** Tab and click the **New** Button.
Here, register an area where node 1 receives data from node 2.



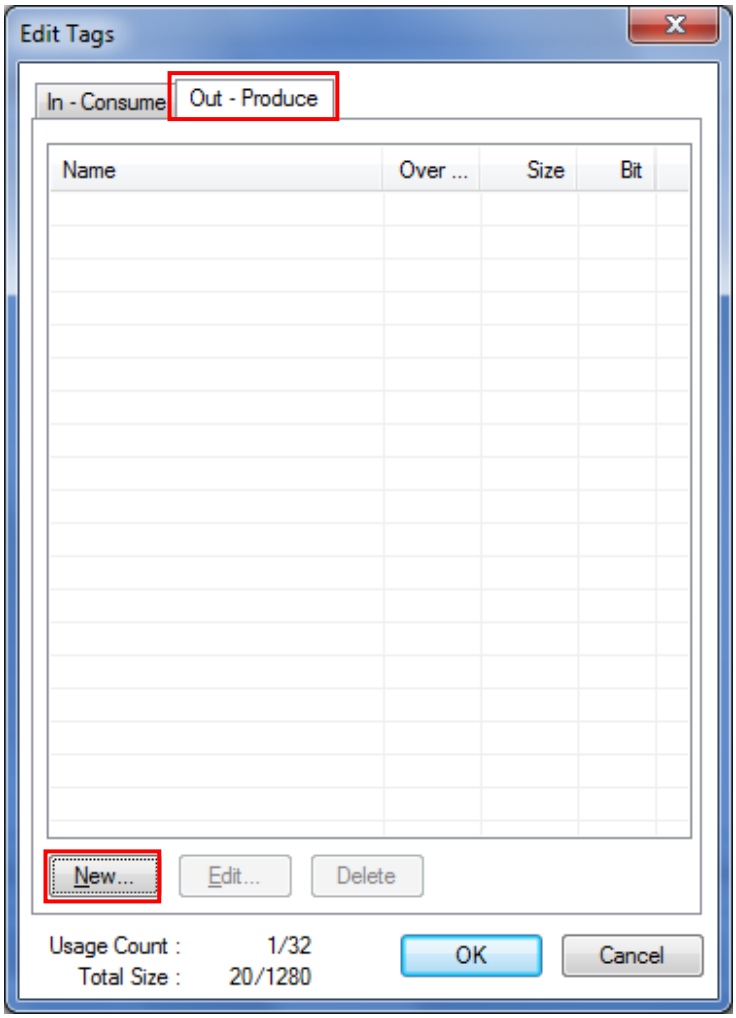

5 The Edit Tag Dialog Box is displayed.
Enter the following values in the parameters.
- Name: *D10100* (Start address of the input data to node 1)
- Size: *48* (Byte)

After entering, click the **Regist** Button.



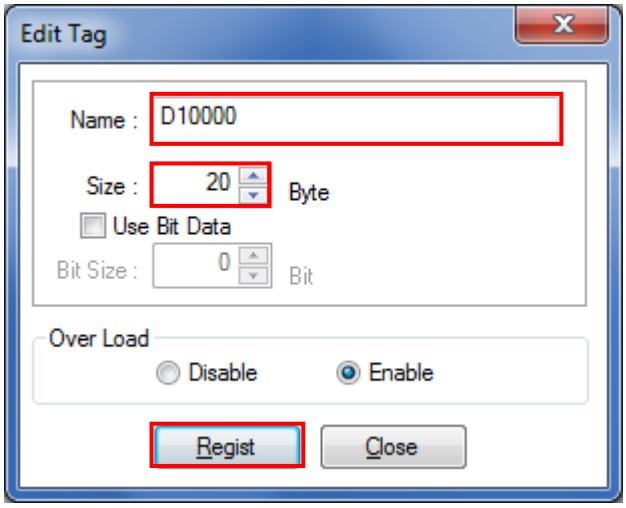

6 The Edit Tag Dialog Box is displayed again. Click the **Close** Button.

7 Select the **Out - Produce** Tab and click the **New** Button.
Here, register the data sent from node 1 to node 2.



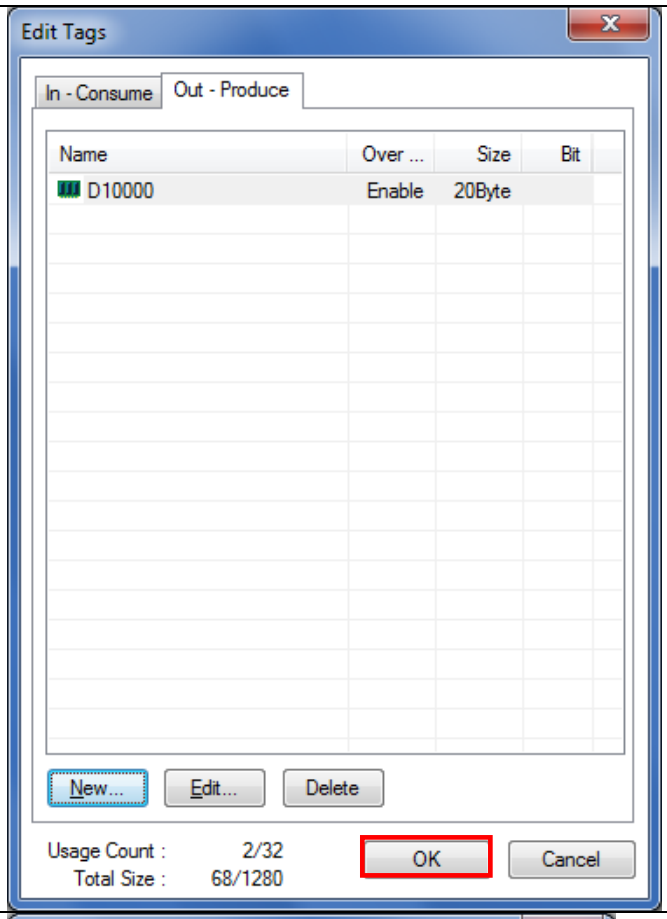

8 The Edit Tag Dialog Box is displayed.
Enter the following values in the parameters.
・Name: *D10000* (Start address of the output data from node 1)
・Size: *20* (Byte)

After entering, click the **Regist** Button.

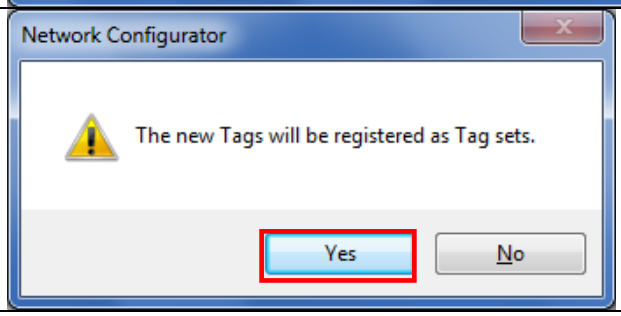



9 The Edit Tag Dialog Box is displayed again. Click the **Close** Button.

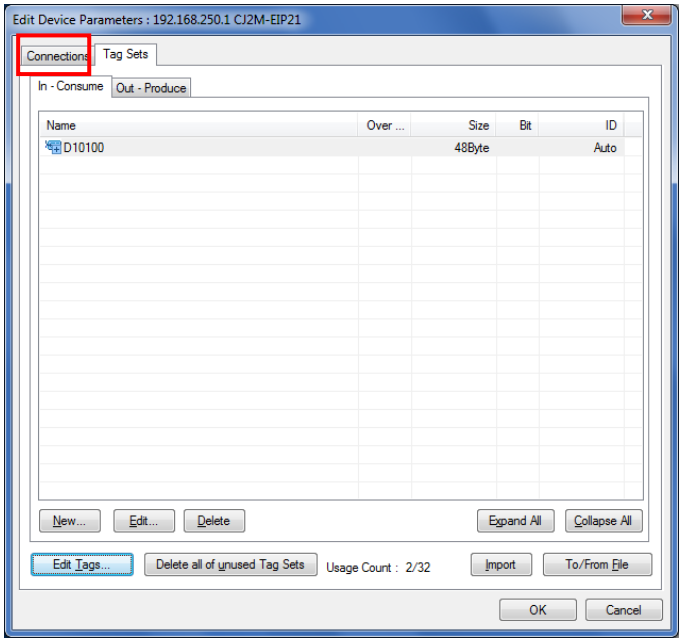
10 When you finish the registration, click the **OK** Button on the Edit Tag Dialog Box.




11 The right dialog box is displayed. Confirm that there is no problem and click the **Yes** Button.



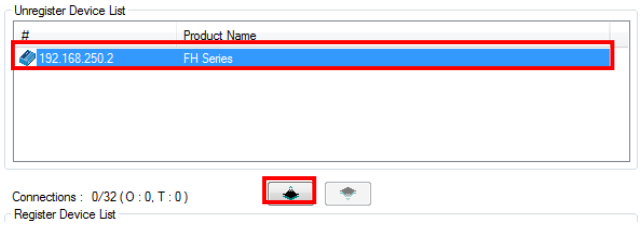

12 The Edit Device Parameters Dialog Box is displayed again. Select the **Connections** Tab.



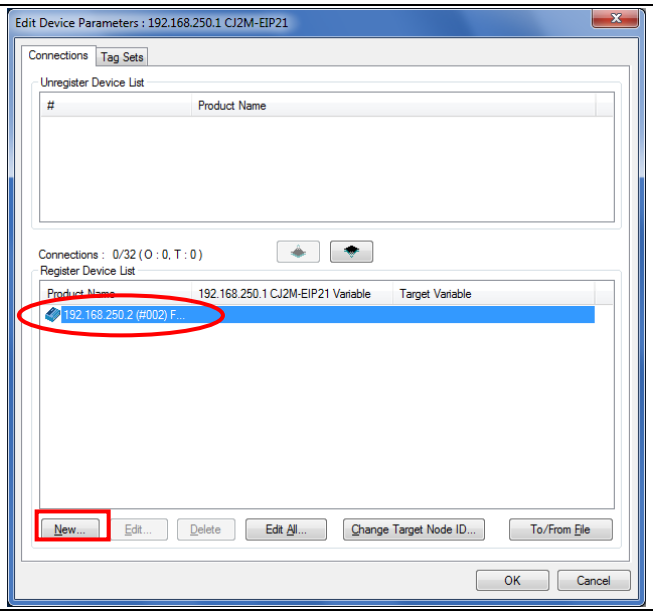
### 7.4.3. Setting the Connection

Associate the tags of the target device (that receives the open request) with the tags of the originator (that requests opening).

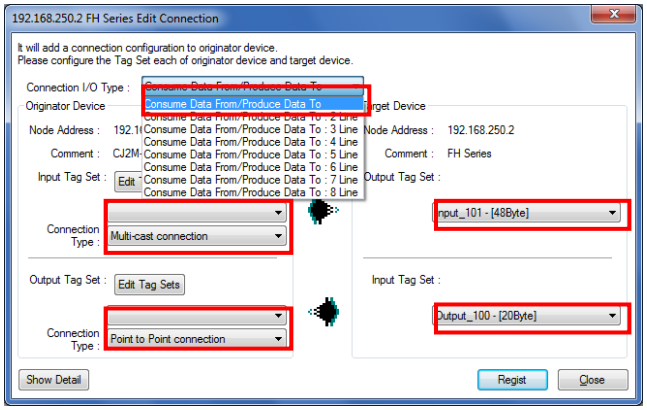
1 Select *192.168.250.2* in the *Unregister Device List* Field. Click the **Down Arrow** Button that is shown in the dialog box.




2 192.168.250.2 is registered in the *Register Device List* Field. Select *192.168.250.2* and click the **New** Button.



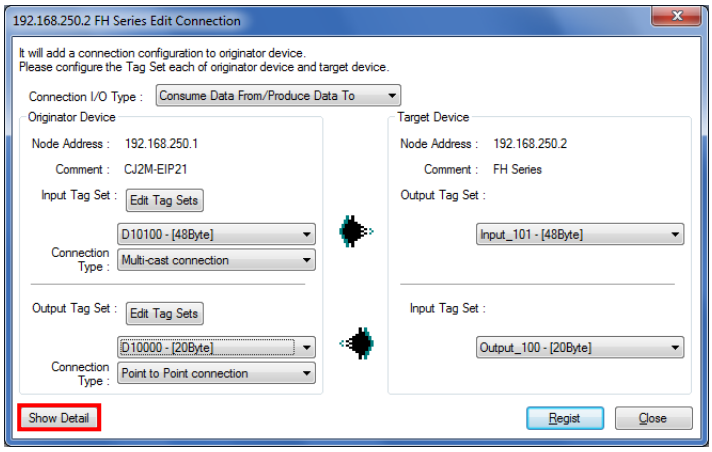

3 The Edit Connection Dialog Box is displayed. Select ***Consume Data From/Produce Data To*** from the Connection I/O Type pull-down list.
Set the values listed in the following table to the *Originator Device* Field and the *Target Device* Field.


192.168.250.2 FH Series Edit Connection
It will add a connection configuration to originator device.
Please configure the Tag Set each of originator device and target device.
Connection I/O Type :
Consume Data From/Produce Data To
Originator Device
Node Address : 192.16
Comment : CJ2M
Input Tag Set :
Edit
Consume Data From/Produce Data To : 3 Line
Consume Data From/Produce Data To : 4 Line
Consume Data From/Produce Data To : 5 Line
Consume Data From/Produce Data To : 6 Line
Consume Data From/Produce Data To : 7 Line
Consume Data From/Produce Data To : 8 Line
Target Device
Node Address : 192.168.250.2
Comment : FH Series
Output Tag Set :
Input_101 - [48Byte]
Connection Type :
Multi-cast connection
Output Tag Set :
Edit Tag Sets
Input Tag Set :
Output_100 - [20Byte]
Connection Type :
Point to Point connection
Show Detail
Regist
Close

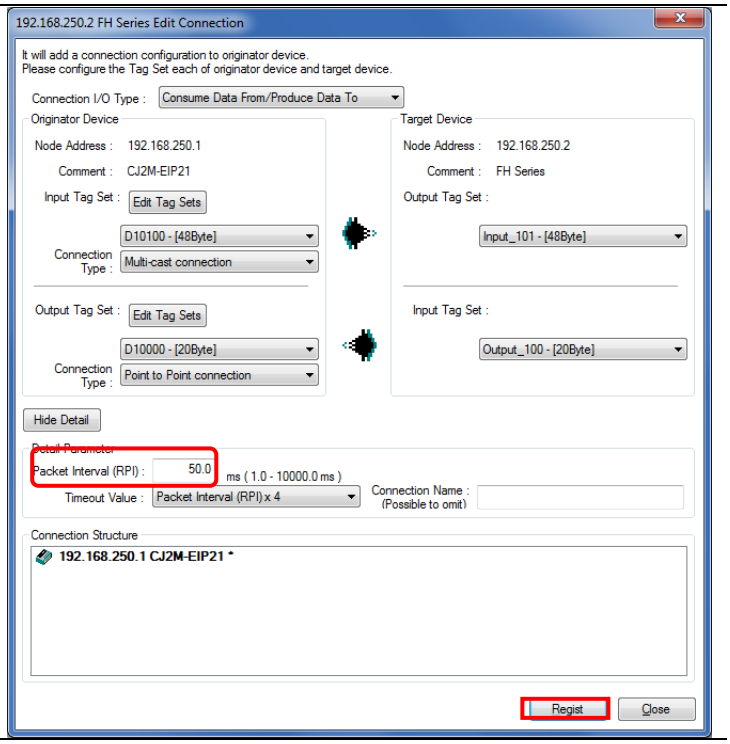
■ Settings of connection

| Connection allocation | | Setting value |
|---|---|---|
| Connection I/O type | | Consume Data From/Produce Data To |
| Originator device | Input Tag Set | D10100-[48 Byte] |
| | Connection Type | Multi-cast connection |
| | Output Tag Set | D10000-[20 Byte] |
| | Connection Type | Point to Point connection |
| Target Device | Output Tag Set | Input_100-[48 Byte] |
| | Input Tag Set | Output_101-[20 Byte] |

4 Confirm that the settings are correct and click the **Show Detail** Button.


192.168.250.2 FH Series Edit Connection
It will add a connection configuration to originator device.
Please configure the Tag Set each of originator device and target device.
Connection I/O Type : Consume Data From/Produce Data To
Originator Device
Node Address : 192.168.250.1
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
D10100 - [48Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
D10000 - [20Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.250.2
Comment : FH Series
Output Tag Set :
Input_101 - [48Byte]
Input Tag Set :
Output_100 - [20Byte]
Show Detail
Regist
Close

5 Confirm that the Packet Interval (RPI) is set to 4 ms or longer and click the **Regist** Button.


192.168.250.2 FH Series Edit Connection
It will add a connection configuration to originator device.
Please configure the Tag Set each of originator device and target device.
Connection I/O Type : Consume Data From/Produce Data To
Originator Device
Node Address : 192.168.250.1
Comment : CJ2M-EIP21
Input Tag Set : Edit Tag Sets
D10100 - [48Byte]
Connection Type : Multi-cast connection
Output Tag Set : Edit Tag Sets
D10000 - [20Byte]
Connection Type : Point to Point connection
Target Device
Node Address : 192.168.250.2
Comment : FH Series
Output Tag Set :
Input_101 - [48Byte]
Input Tag Set :
Output_100 - [20Byte]
Hide Detail
Packet Interval (RPI) : 50.0 ms ( 1.0 - 10000.0 ms )
Timeout Value : Packet Interval (RPI) x 4
Connection Name : (Possible to omit)
Connection Structure
192.168.250.1 CJ2M-EIP21 *
Regist
Close

### Precautions for Correct Use

If the RPI with EtherNet/IP is longer than the duration of the FH Sensor Controller signal change, the signal change may not be detected.
For details on communications cycle (RPI) with EtherNet/IP for the FH Sensor Controller, refer to *Communicating with EtherNet/IP* in *Section 2 Methods for Connecting and Communicating with External Devices* of the *Vision Sensor FH/FZ5 Series Vision System User's Manual (Communications Settings)* (Cat.No. Z342).

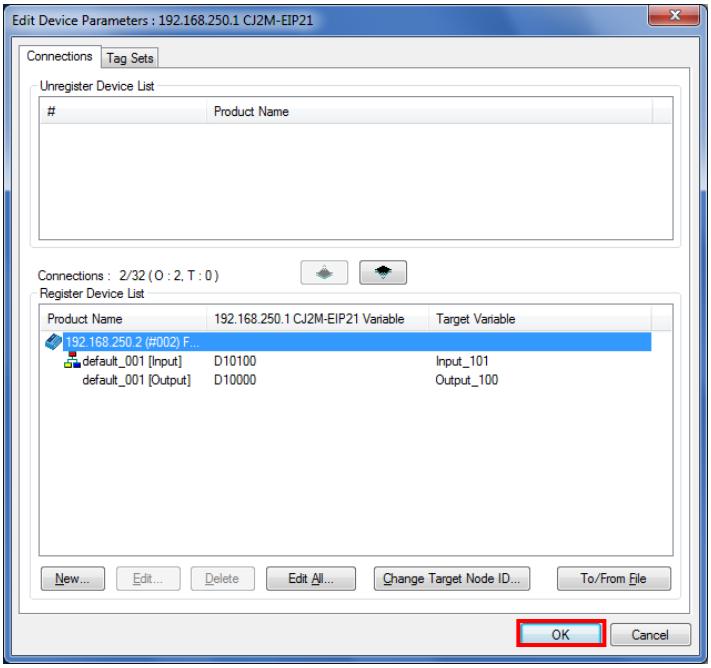
**Precautions for Correct Use**

When the measurement interval is short or when the measurement processing load is high, the Sensor Controller will give priority to measurement processing over communications processing. Therefore, communications between the external device and the Sensor Controller may be temporarily interrupted or communications errors may occur.
If this happens, make the following settings:
Packet interval (RPI value) X Timeout value > Sensor Controller transaction time

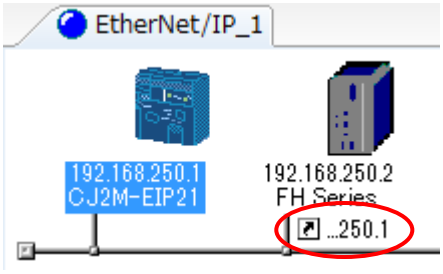
For details on the timeout value for the FH Sensor Controller, refer to *Communicating with EtherNet/IP* in *Section 2 Methods for Connecting and Communicating with External Devices* of the *Vision Sensor FH/FZ5 Series Vision System User's Manual (Communications Settings)* (Cat. No. Z342).

6 The Edit Connection Dialog Box is displayed again. Click the **Close** Button.

7 The Edit Device Parameters Dialog Box is displayed again. Click the **OK** Button.

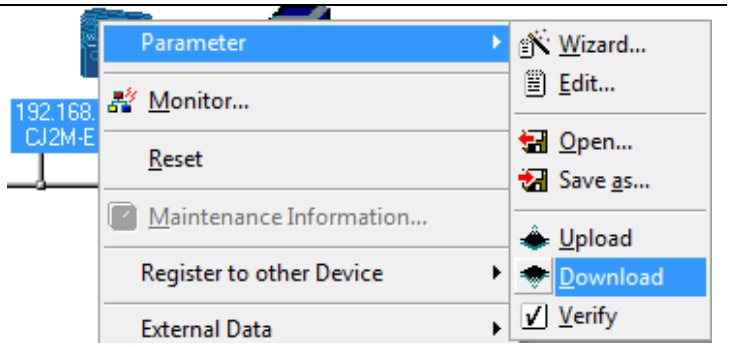
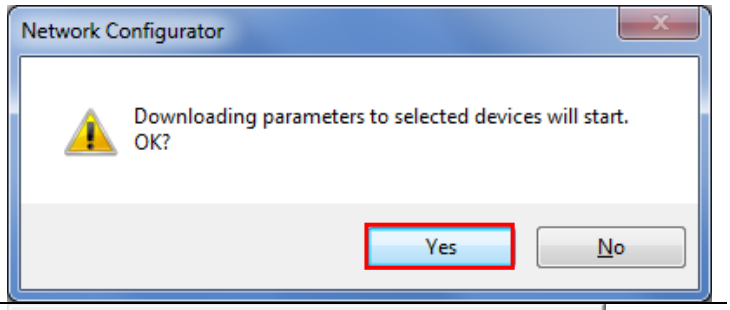
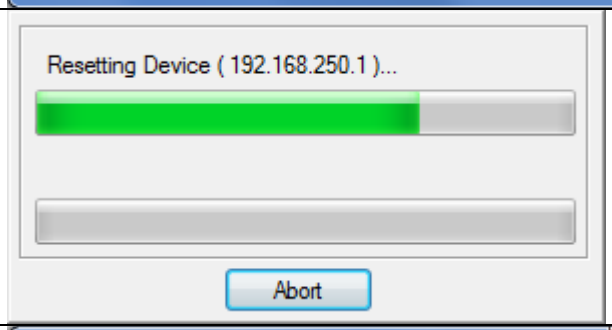
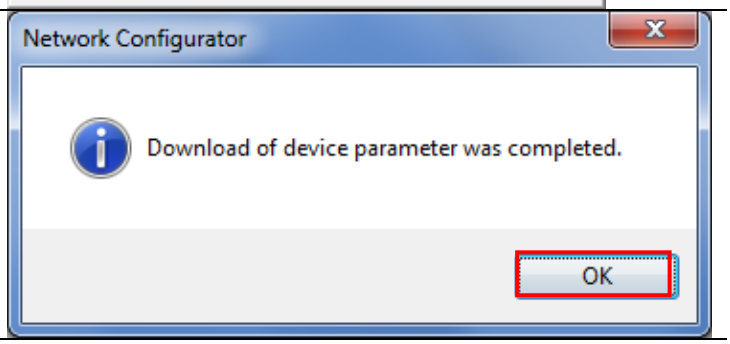



8 When the connection setting is completed, the registered node address is displayed under the device icon of node 2 on the Network Configuration Pane.



### 7.4.4. Transferring the Tag Data Link Parameters

Transfer the set tag data link parameters to the PLC.

| | | |
|---|---|---|
| 1 | Right-click the device icon of node 1 on the Network Configuration Pane and select ***Parameter*** - ***Download***. |  |
| | The dialog box on the right is displayed. Confirm that there is no problem and click the **Yes** Button. |  |
| 2 | The tag data link parameters are downloaded from Network Configurator to the PLC. |  |
| 3 | The dialog box on the right is displayed. Check the contents and click the **OK** Button. |  |

## 7.5. Checking the EtherNet/IP Communications

Confirm that the EtherNet/IP tag data links are operated normally.

### 7.5.1. Checking the Connection Status

Check the connection status of EtherNet/IP.

1 Confirm that the tag data links are normally in operation by checking the LED indicators on each device.

(EtherNet/IP Unit)

・The LED indicators on the PLC (EtherNet/IP Unit) in normal status are as follows:

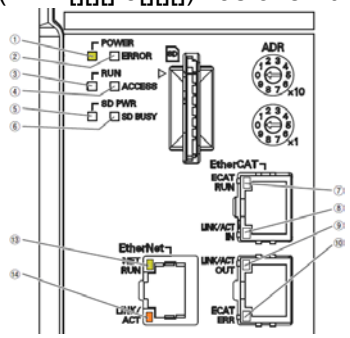
[MS]: Lit green
[NS]: Lit green
[COMM]: Lit yellow
[100M] or [10M]: Lit yellow

・For FH Sensor Controller (FH-1[][][]/3[][][]), check the status of the LED indicators for the PORT1.

The LED indicators in normal status are as follows:
[POWER]: Lit green
[ERROR]: Not lit
[NET RUN]: Lit green
[LINK/ACT]: Flashing orange
(Flashing while packets are being sent and received)

・Model (FH-1[][][]/3[][][]) has one Ethernet port.

PORT1




(FH Sensor Controller)

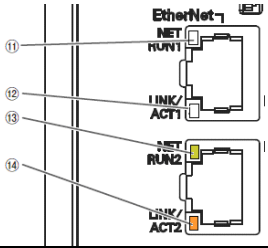
| | LED name Description | Description |
|---|---|---|
| ① | POWER LED | Lit while power is ON. |
| ② | ERROR LED | Lit when an error has occurred. |
| ③ | RUN LED | Lit while the controller is in Measurement Mode. |
| ④ | ACCESS LED | Lit while the memory is accessed. |
| ⑤ | SD POWER LED | Lit while power is supplied to the SD card and the card is usable. |
| ⑥ | SD BUSY LED | Blinks while the SD memory card is accessed. |
| ⑦ | EtherCAT RUN LED | Lit while EtherCAT communications are usable. |
| ⑧ | EtherCAT LINK/ACT IN LED | Lit when connected with an EtherCAT device, and blinks while performing communications. |
| ⑨ | EtherCAT LINK/ACT OUT LED | Lit when connected with an EtherCAT device, and blinks while performing communications. |
| ⑩ | EtherCAT ERR LED | Lit when EtherCAT communications have become abnormal. |
| ⑬ | EtherNet NET RUN2 LED | Lit when Ethernet communications are usable. |
| ⑭ | EtherNet NET LINK/ACK2 LED | Lit when connected with an Ethernet device, and blinks while performing communications. |

* For FH Sensor Controller (FH-1[][][]-[][]/3[][][]-[][]), check the status of the LED indicators for the PORT2.

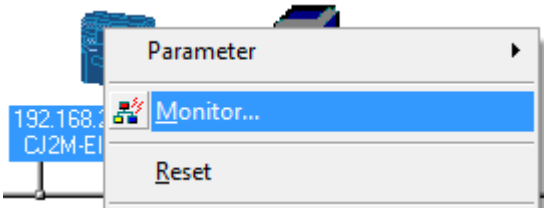
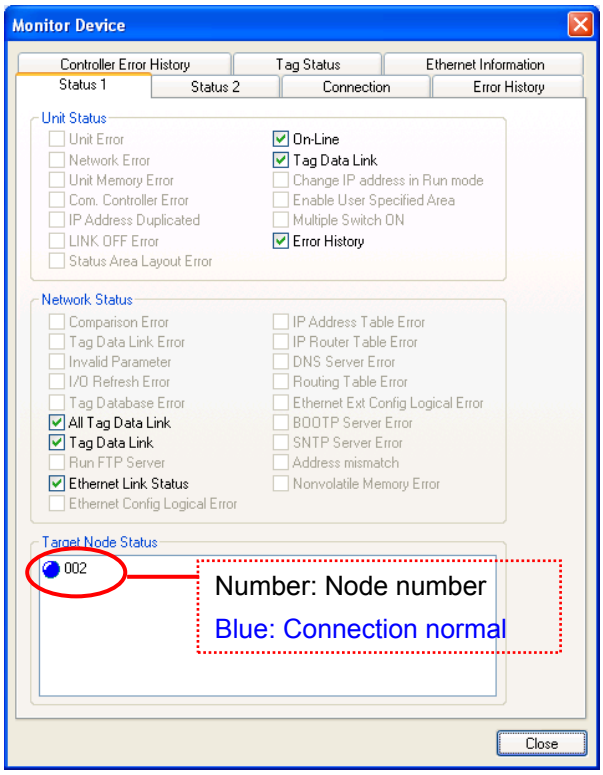
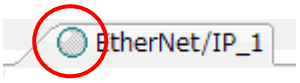
The LED indicators in normal status are as follows:
[POWER]: Lit green
[ERROR]: Not lit
[NET RUN2]: Lit green
[LINK/ACT2]: Flashing orange
(Flashing while packets are being sent and received)

* Model (FH-1[][][]-[][]/3[][][]-[][]) has two Ethernet ports.

PORT1
PORT2




| | LED name Description | Description |
|---|---|---|
| ⑪ | EtherNet NET RUN1 LED | Lit while EtherCAT communications are usable. |
| ⑫ | EtherNet NET LINK/ACK1 LED | Lit when connected with an Ethernet device, and blinks while performing communications. |
| ⑬ | EtherNet NET RUN2 LED | Lit when Ethernet communications are usable. |
| ⑭ | EtherNet NET LINK/ACK2 LED | Lit when connected with an Ethernet device, and blinks while performing communications. |

| | | |
|---|---|---|
| 2 | Confirm that the tag data links are normally in operation by checking the status information on the Monitor Device Window of the Network Configurator.<br><br>Right-click the device icon of node 1 on the Network Configuration Pane and select ***Monitor***. |  |
| 3 | The dialog box on the right displays the Status 1 Tab Page of the Monitor Device Window.<br><br>When the same items are selected as shown on the right, the data links are normally in operation. |  |
| 4 | Select Disconnect from the Network Menu to go offline. The color of the icon on the figure changes from blue.<br>Select ***Exit*** from the File Menu to exit the Network Configurator. |  |

### 7.5.2. Checking the Data that are Sent and Received

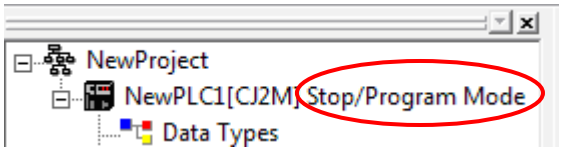
Confirm that the correct data are sent and received.

**⚠ Caution**

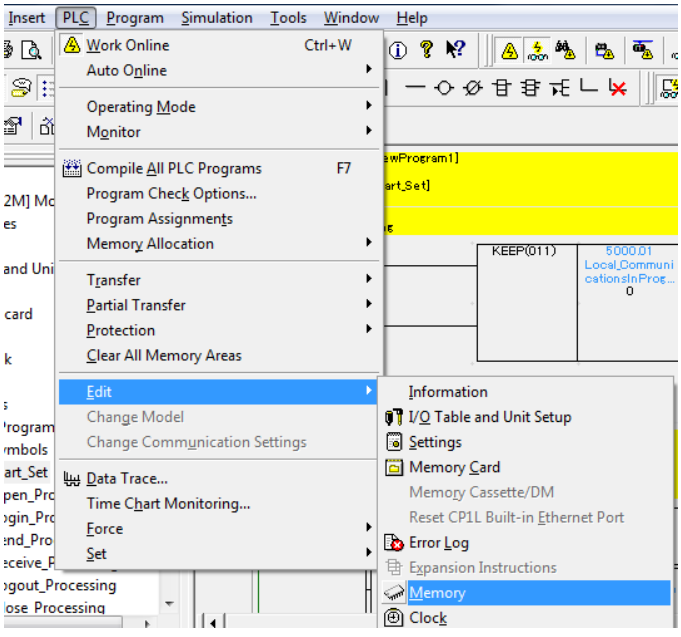
Confirm safety sufficiently before monitoring power flow and present value status in the Ladder Section window or when monitoring present values in the Watch window. If force-set/reset or set/reset operations are inadvertently performed by pressing short-cut keys, the devices connected to Output Units may malfunction, regardless of the operating mode of the CPU Unit.

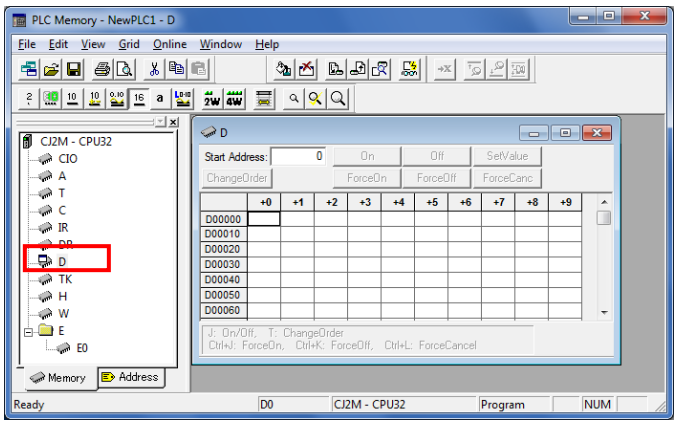
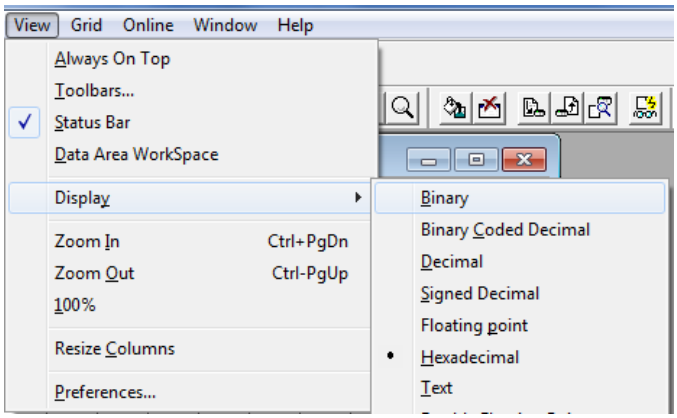
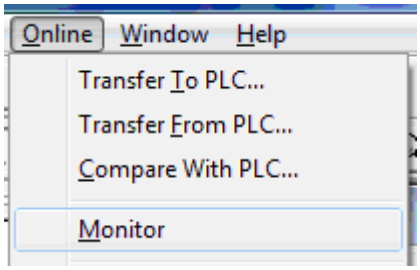
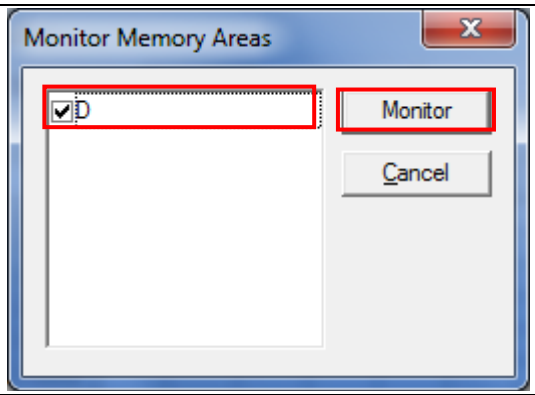
1 Confirm that the PLC is in Program Mode.

* If the PLC is not in Program Mode, change to Program Mode by referring to step 1 of *7.3.3. Setting the IP Address*.



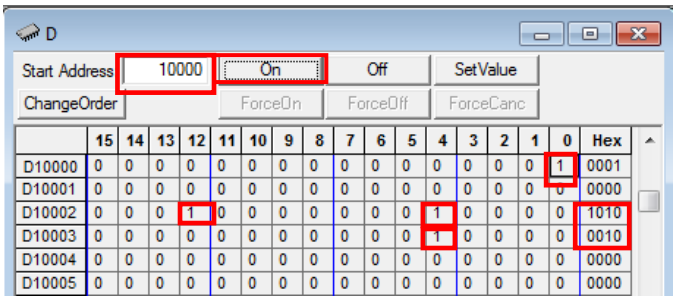

2 Select ***Edit*** - ***Memory*** from the PLC Menu.



| | | |
|---|---|---|
| 3 | Double-click **D** from the list in the PLC Memory Window that is displayed. |  |
| 4 | Select ***Display*** - ***Binary*** from the View Menu. |  |
| 5 | Select ***Monitor*** from the Online Menu. |  |
| 6 | The Monitor Memory Areas Dialog Box is displayed.<br>Select the *D* Check Box and click the **Monitor** Button. |  |

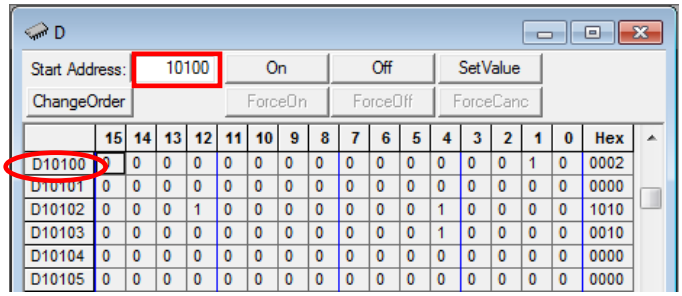
**7** Select bits 12 and 4 of D10002 and bit 4 of D10003, and then click the **On** Button. (After turning them ON, the values change to 1.)
Then, turn ON bit 0 of D10000.

* D10002 and D10003 are an area for a command code and contain 00101010(Hex) (Measurement command).
Bit 0 of D10000 is a command execution (EXE) flag.



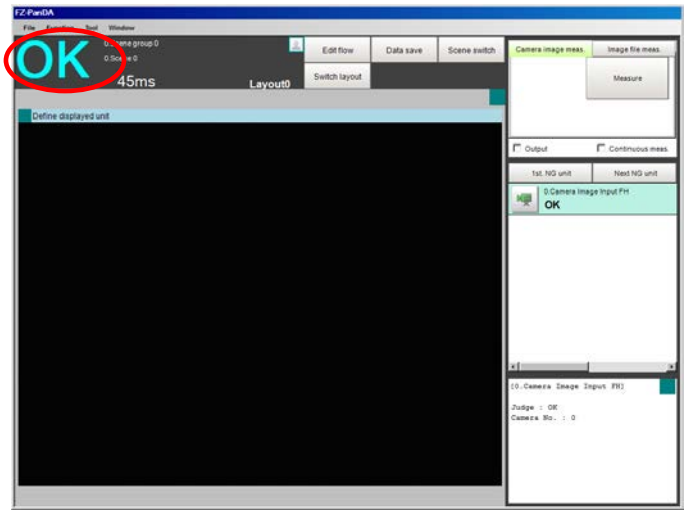

| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D10000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0001 |
| D10001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10002 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1010 |
| D10003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0010 |
| D10004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

**8** Enter *10100* in the *Start Address* Field on the D Window.
Confirm that the start address was changed to D10100.



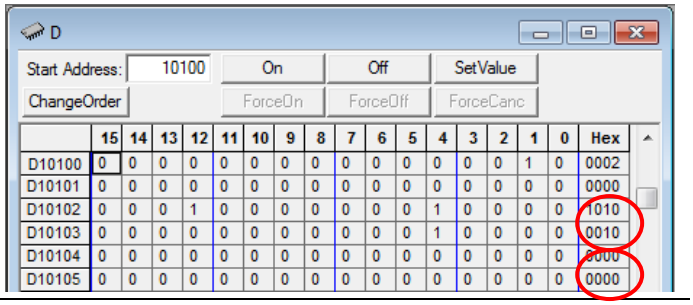

| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D10100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0002 |
| D10101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10102 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1010 |
| D10103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0010 |
| D10104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

**9** After the measurement is completed, OK is displayed on the dialog box.




**10** Confirm that values of D10102 to D10105 are set as shown on the right.

D10102 and D10103 contain the command code that you set.
D10104 and D10105 contain the command execution result (0: OK).




| | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | Hex |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D10100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0002 |
| D10101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10102 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1010 |
| D10103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0010 |
| D10104 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |
| D10105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0000 |

# 8. Initialization Method

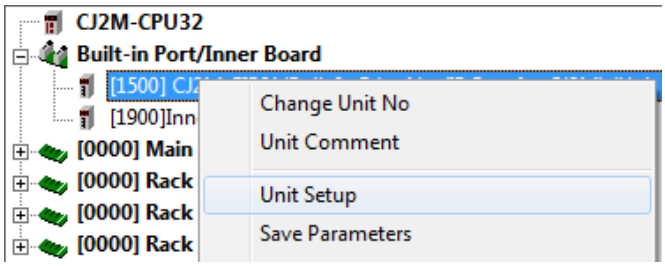
This document explains the setting procedure from the factory default setting.
Some settings may not be applicable as described in this document unless you use the devices with the factory default setting.

## 8.1. Initializing the PLC

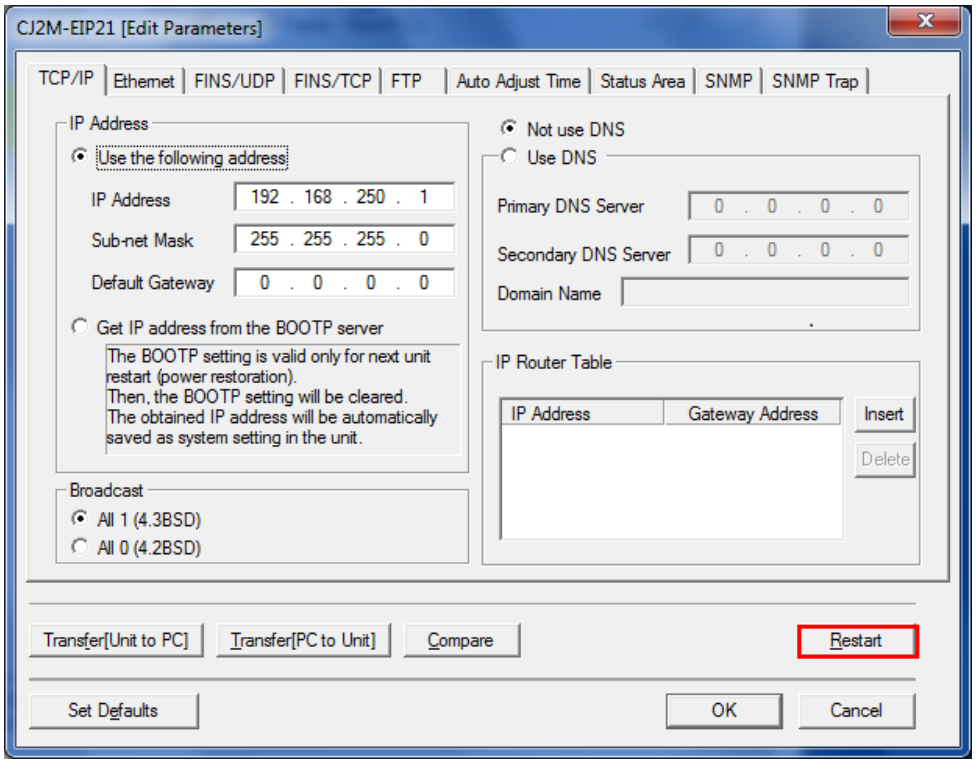
To initialize the settings of the PLC, it is necessary to initialize the CPU Unit and EtherNet/IP Unit. Change the PLC to PROGRAM mode before the initialization.

### 8.1.1. EtherNet/IP Unit

(1) Select ***Edit - I/O Table and Unit Setup*** from the PLC Menu of the CX-Programmer.
Right-click the EtherNet/IP Unit on the PLC IO Table Window and select ***Unit Setup*** from the menu.

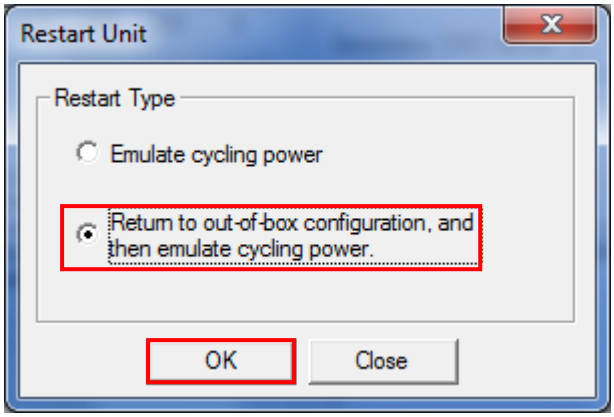



(2) Click the **Restart** Button on the Edit Parameters Dialog Box.



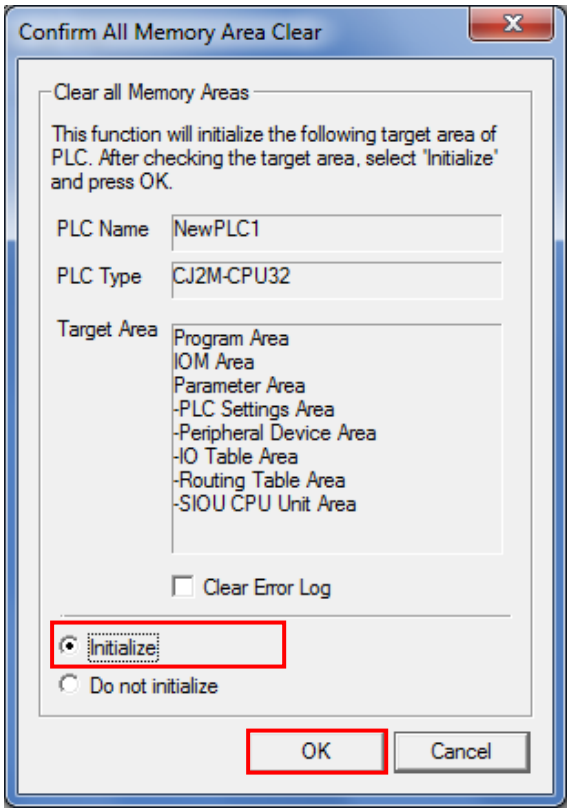

(3) A confirmation dialog box on the right is displayed. Confirm that there is no problem and

click the **Yes** Button. On the Restart Unit Dialog Box, select the *Return to out-of-box configuration, and then emulate cycling power* Option, and click the **OK** Button. A complete dialog box is displayed. Check the contents and click the **OK** Button.




### 8.1.2. CPU Unit

To initialize the settings of the CPU Unit, select ***Clear All Memory Areas*** from the PLC Menu of the CX-Programmer. On the Confirm All Memory Area Clear Dialog Box, select the *Initialize* Option and click the **OK** Button.




## 8.2. Initializing the FH Sensor Controller

For how to initialize the FH Sensor Controller, refer to *Initializing the Controller* in *Section 1 Before Operation* of the *Vision Sensor FH/FZ5 Series Vision System User's Manual* (Cat.No.Z340).

# 9. Revision History

| Revision code | Date of revision | Revision reason and revision page |
|---|---|---|
| 01 | Dec. 12, 2013 | First edition |
| | | |
| | | |

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